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BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Staff Draft

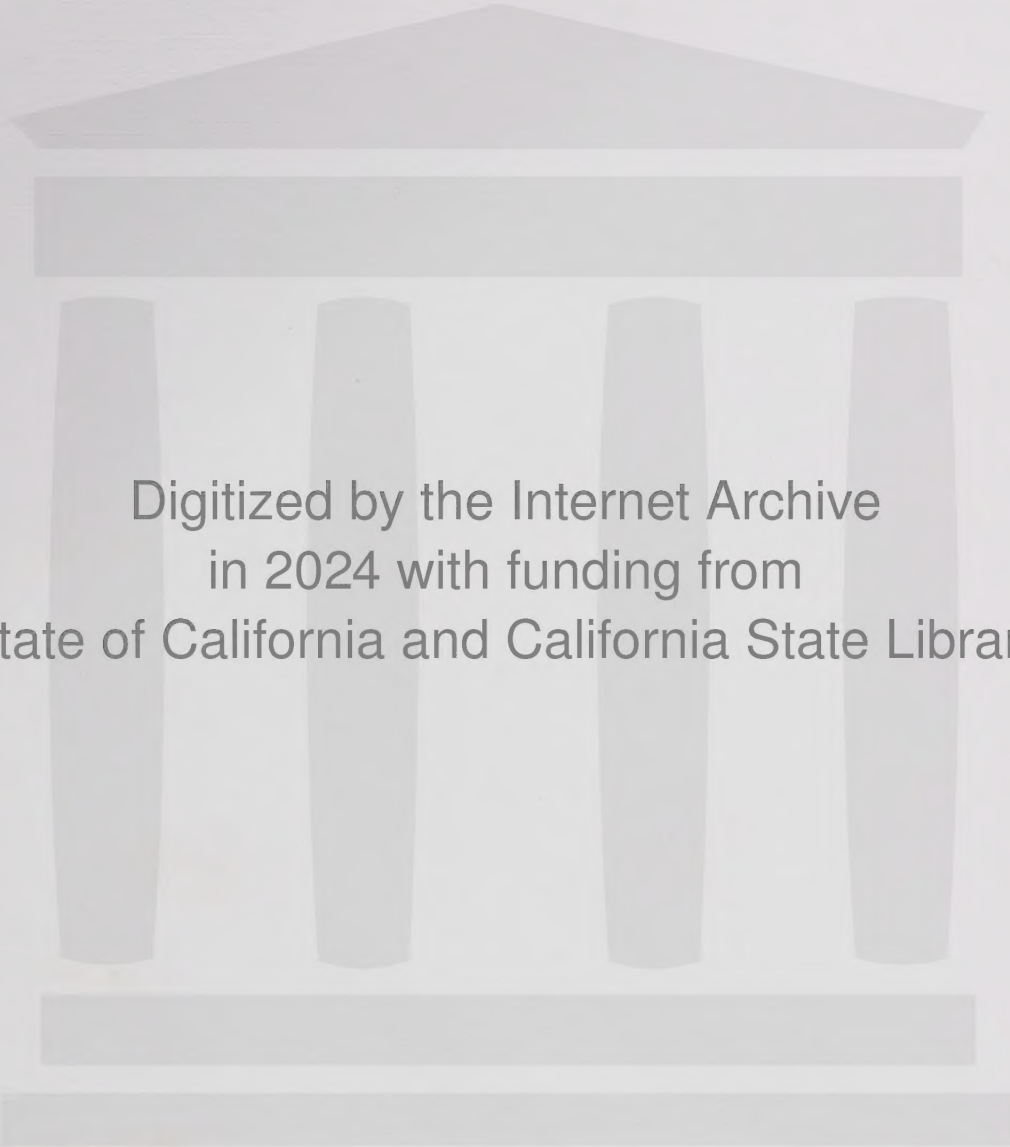
May 7, 1985

Prepared for the City of Berkeley

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III. ALTERNATIVES

This section of the evaluation report provides a detailed description of the alternatives. It is this description that permits a comparison of each alternative against an explicit range of evaluation criteria.

This chapter provides:

- A. Summaries of the land use, open space, and development provisions of each alternative; and the assumed development phasing;
- B. The basic physical components which are a common framework for each of the alternatives; and
- C to G. A detailed description for each alternative including the specific pattern, mix and intensity of land use; the circulation program, development program, and open space program; and an illustrative site plan.

A. SUMMARY COMPARISONS

The generic land use alternatives include five different development scenarios. They provide for a broad range of open space and development concepts including:

- 0 The No Project Alternative
- 1 A Low-Intensity Alternative with development concentrated at the existing Marina
- 2 A Low/Moderate-Intensity Alternative establishing a second development focus at the waterfront centered at Gilman Street
- 3 A Moderate-Intensity Alternative incorporating a residential component to provide a mixed-use character
- 4 A High-Intensity Alternative establishing a new region-serving office center

COMPARISON OF LAND USE AND DEVELOPMENT

Table III.A.1 provides a comparison of the land uses in each alternative distinguishing between open space and development areas. The planning area includes a total of 690 acres. In each alternative, 515 acres are submerged or wetlands. Development is confined to the 175 acres of upland area.

Table III.A.2 provides a summary of the alternative development programs. This table distinguishes among land uses.

Table III.A.3 provides a comparison of the physical characteristics of development and open space for each alternative.

Table III.A.4 provides a comparison of the development characteristics by subarea.

Table III.A.5 provides a phasing schedule of private development utilized in the evaluation of alternatives. The phasing schedule responds to anticipated development absorption rates and to the constraints imposed by the current lease agreement on the areas north of Virginia Street. This lease provides for use of the this area by the Pacific Racing Association to the year 1997. The area is currently the site of horse barns serving the race-track and parking areas for visitors.

TABLE III.A.1: SUMMARY OF ALTERNATIVE LAND USE ALLOCATIONS (ACRES)

| <u>Alternative</u> | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> |
|---------------------------------------|-------------|-------------|-------------|-------------|
| Open Space | | | | |
| Basic Components | 70 | 70 | 70 | 65 |
| Additional (including circulation) | 86 | 58 | 27 | 24 |
| Development | | | | |
| Privately-held | 7 | 37 | 63 | 71 |
| City-owned | 5 | 0 | 5 | 5 |
| Freeway Take (Approximate) | <u>5-10</u> | <u>5-10</u> | <u>5-10</u> | <u>5-10</u> |
| Total Upland Area | 175 | 175 | 175 | 175 |
| Mudflats/Marsh | 5-10 | 5-10 | 5-10 | 5-10 |
| Beach Areas | 7-10 | 7-10 | 7-10 | 7-10 |
| Open Water Areas | <u>+500</u> | <u>+500</u> | <u>+500</u> | <u>+500</u> |
| Total Wetlands and Submerged Lands | 515 | 515 | 515 | 515 |
| TOTAL | 690 | 690 | 690 | 690 |

TABLE III.A.2: SUMMARY OF ALTERNATIVE DEVELOPMENT PROGRAMS

| <u>Alternative</u> | <u>1</u> (s.f.) | <u>2</u> (s.f.) | <u>3</u> (s.f.) | <u>4</u> (s.f.) |
|---------------------------|--------------------|--------------------|------------------------------|--------------------|
| Commercial/ Recreation | <u>200,000</u> | <u>500,000</u> | <u>480-600,000</u> | <u>1,050,000</u> |
| Hotel | | 650 rooms | 550 rooms | 1,500 rooms |
| Retail | 150,000 | 100,000 | 35-50,000 | 100,000 |
| Conf. Facility | 50,000 | 50,000 | 50-150,000 | 50,000 |
| Office/R&D | None | None | <u>1,145,000</u> | <u>3,000,000</u> |
| Residential | None | None | <u>760,000</u> 950 units | None |
| TOTAL | 200,000 | 500,000 | 2,300,000 to 2,420,000 | 4,150,000 |

TABLE III.A.3: COMPARISON OF THE PHYSICAL CHARACTERISTICS OF DEVELOPMENT

| <u>Alternative</u> | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> |
|----------------------------|----------|----------|------------|------------|
| <u>Open Space</u> | | | | |
| Acres | 156 | 128 | 97 | 89 |
| Percent of Total Upland | 93 | 78 | 59 | 54 |
| <u>Development Parcels</u> | | | | |
| Acres | 7 + 5 | 37 | 63 + 5 | 71 + 5 |
| City-owned | | | City-owned | City-owned |
| Percent of Total Upland | 7 | 22 | 41 | 46 |

Note: Variations in the total land acreage for each alternative varies slightly by the assumed take for the freeway improvements.

Development Characteristics

| | | | | |
|--|------------------|------------------|------------------------------|-------------------|
| Total Square Feet | 200,000 | 500,000 | 2,300,000 to 2,420,000 | 4,150,000 |
| Net Floor Area Ratio (Average FAR) | 0.2 to 0.4 | 0.3 to 0.4 | 0.75 to 0.90 | - 1.44 |
| Average Height | 2 stories | 2 stories | 3 to 4 stories | 5 to 6 stories |
| Maximum Height | 2 stories | 2 stories | 6 stories | 10 stories |

TABLE III.A.4
DEVELOPMENT CHARACTERISTICS OF GENERIC ALTERNATIVES BY SUBAREA

| | ALTERNATIVE 1 | ALTERNATIVE 2 | ALTERNATIVE 3 | ALTERNATIVE 4 |
|---------------------------------|--|---|---|--|
| PHASE I | | | | |
| 1. EAST BRICKYARD | 10 ac. Additional Nature Preserve | 10 ac. Additional Nature Preserve | 8-10 ac. 230,000 s.f. Hotel 300 rooms Max. 3-4 stories Max. 20% site coverage, FAR .6 50% landscaped o.s. 240-320 cars required | 10 ac. Public Access Easement |
| 2. EAST MEADOW Along Freeway | 10-12 ac. Freeway Buffer, Possible Playing Fields | 10-12 ac. Freeway Buffer, Possible Playing Fields | 10-12 ac. (3-5 ac. parcels) 532,000 s.f. 290 housing units + 300,000 s.f. office Max. 40' for housing, 65' for office Max. 55% site coverage, FAR 1.0 Min. 30% landsc. o.s. 1,040 cars required | 10 ac. (1 parcel) 850,000 s.f. Hotel, Office, Support Retail 50-100' heights Max. 75% coverage, FAR 2.03 Min. 25% land. o.s. 1,700 cars required |
| 3. CENTRAL AND NORTH MEADOW | 35 ac. Open Space Concept: Major Multi-use Space | 35 ac. Open Space Concept: Low Maintenance Naturalistic Park | 35 ac. Open Space Concept: Civic/ Cultural Concourse, including 50,000- 150,000 s.f. of conference, exhibit, and cultural facilities | 24 ac. public access easement 15.25 'ac. dev't. 955,000 s.f. Hotel, Office, Support Retail 50-75' heights Max. 75% coverage, FAR 1.5 Min. 25% land. o.s. 1,500 cars required |

| | | | | |
|----------------|--|--------------------|--|--|
| 4. MARINA EDGE | 7 ac. + 5 City-owned 200,000 s.f. Commercial Rec./ Community Meeting Rooms Max. 2 stories Max. 20% site coverage, FAR .2-.4 50% landscaped o.s. 400-600 cars required | 5-7 ac. Open Space | 7 ac. + 5 City-owned 200,000 s.f. 250-room Hotel + 35,000 s.f. Retail/ Restaurant Max. 3 stories Max. 25% site coverage, FAR .3 50% landscaped o.s. 300 cars required | 5 ac. + 5 City-owned 150,000 s.f. Comm. Rec./Specialty Retail/Public Conf. Center 35-75' heights Max. 50% coverage, FAR .23 25% landscaped o.s. 550 cars required |
|----------------|--|--------------------|--|--|

 PHASE II (based on Santa Fe lease to Pacific Racing Association, currently scheduled to expire in 1997)

| | | | | |
|---------------------------------|----------------------|--|--|--|
| 5. NORTH BASIN Along Freeway | 20-25 ac. Open Space | 37 ac. (incl. Horse Barns) 500,000 s.f. Hotel (300 rms.) + Hotel/Conf. (350 rms. + 50,000 s.f. conf. center) + Comm. Rec. (100,000 s.f.) Max. 2 stories Max. 25% site coverage, FAR .2-.4 50% landscaped o.s. 1,050 cars required | 15-20 ac. (3-5 ac. parcels) 705,000 s.f. 350 housing units + 425,000 s.f. Office Max. 40' for housing, 65' for office Max. 55% site coverage, FAR 1.0 Min. 30% landsc. o.s. 1,400 cars required | 24 ac. (1 parcel) 1,215,000 s.f. Office, R&D, Support Retail 50-75' heights Max. 50% coverage, FAR 1.2 Min. 25% land. o.s. 3,000 cars required |
|---------------------------------|----------------------|--|--|--|

| | | | | |
|----------------|----------------------|--|---|---|
| 6. HORSE BARNS | 16-17 ac. Open Space | (Development program listed under North Basin includes Horse Barn Area) | 16 ac. (2-3 parcels) 670,000 s.f. 310 housing units + 420,000 s.f. office Max. 40' for housing, 65' for office Max. 55% site coverage, FAR 1.0 Min. 30% landsc. o.s. 1,360 cars required | 16-17 ac. (1 parcel) 1,080,000 s.f. Office, R&D, Support Retail 50-75' heights Max. 55% coverage, FAR 1.5 Min. 25% land. o.s. 2,700 cars required |
|----------------|----------------------|--|---|---|

TABLE III.A.5: DEVELOPMENT PHASING SCHEDULE - PRIVATE DEVELOPMENT

| | Phase I 1985 to 1995 | | Phase II 1996 to 2010 | |
|-----------------------------|---|------|--------------------------------------|-------|
| Years: | 1-5 | 6-10 | 11-15 | 16-25 |
| <u>Alternative 1</u> | | | | |
| Marina Edge | 200K s.f. Commercial/Rec. | | | |
| <u>Alternative 2</u> | | | | |
| North Basin/ Horse Barns | 100K s.f. Commercial/Rec. 650 hotel rooms | | | |
| <u>Alternative 3</u> | | | | |
| East Brickyard | 300 hotel rooms | | | |
| Marina Edge | 250 hotel rooms 35K s.f. retail | | | |
| East Meadow | 300K s.f. office 290 d.u. | | | |
| North Basin | 425K s.f. office 350 d.u. | | | |
| Horse Barns | 420,000 s.f. 310 d.u. | | | |
| <u>Alternative 4</u> | | | | |
| East Meadow | 517K s.f. office/ retail 500 hotel rooms | | | |
| Central Meadow | 289K s.f. office/ retail 250 hotel rooms 750 hotel rooms rooms | | | |
| North Basin | 607.5K s.f. office/R&D/ retail | | 607.5K s.f. office/R&D/ retail | |
| Horse Barns | 1,080K s.f. office/R&D/ retail | | | |

Source: ROMA; McGuire and Company, Santa Fe Land Improvement Company.

40191h/IIIA

B. BASIC COMPONENTS COMMON TO ALL ALTERNATIVES

Diagrammed in Figure III.B.1 is a framework of open space elements which are included in all alternatives. These basic components are derived from the fundamental environmental constraints and recreation needs of the site and its context. They total approximately 70 acres of open space - over 40 percent of the privately held upland area - and are a major portion of site improvement costs for all alternatives.

LANDFILL CLOSURE/SITE PREPARATION

Landfill closure requirements are a major cost and development feasibility consideration; they are a necessary prerequisite no matter which alternative is chosen. The probable landfill closure requirements include:

1. fill to provide adequate drainage and soil cover (in all areas except Brickyard);
2. impervious clay or other seal (must not be disturbed by major excavation in future);
3. improvements to riprap edge to seal leachate leaks.

SHORELINE TRAIL AND OPEN SPACE CORRIDOR

This corridor would be a minimum of 100 feet wide, to serve as a strong link in a continuous regional shoreline trail system. The trail itself would accommodate pedestrians, joggers, and bicyclists, and would have an all-weather surface. Staging areas would be provided at appropriate intervals along the trail, and would include parking, toilets, trash cans, drinking water, trail information, and a picnic area. The trail would be connected to the rest of the city at least at Gilman (under the freeway) and at Aquatic Park or University (Caltrans overcrossing or acceptable alternative to be determined by Interstate 80 study).

CREEK OUTFALL IMPROVEMENTS

Water quality problems limit recreational opportunities adjacent to the creek outfalls on the site. This and associated aesthetic problems make it urgent that the City investigate the feasibility of improvements at the outfalls. As described in the environmental background analysis, these improvements could take several forms:

1. Minimal action: Landscaping and removal of debris.
2. Uncover and landscape stream drainage channel.
3. Extend outfall to improve shoreline appearance and discharge pollutants further from shore.

FIGURE III.B.1
FRAMEWORK OF OPEN SPACE ELEMENTS

For the purpose of this analysis, Option 3 is assumed for all outfall alternatives, although further study would be required to identify detailed cost and engineering feasibility. The Gilman and Virginia outfalls would only be slightly extended to straighten out the shoreline, but Strawberry Creek is assumed to be rerouted through a culvert that discharges toward Brickyard Cove.

NORTH BASIN IMPROVEMENTS

In addition to the outfall modifications and shoreline repair discussed above, other basic improvements assumed for the North Basin include a fishing/boat rental pier at Gilman, a boathouse and staging area, and provision for buoyed small-boat mooring. None of these improvements require dredging in the North Basin.

MEADOW OPEN SPACE

All alternatives include at least 29 acres of open space in the Meadow, i.e., 40 percent of its total area. However, there are widely varying options for the activity program of the Meadow parkland. These options can be combined with any of the land use alternatives, but for the purpose of the illustrative drawings, they have been assumed to be as follows:

Alternative 1 - Major multi-use space defined by groves and smaller meadows.

Alternative 2 - Naturalistic "urban wilderness" similar to North Waterfront Park.

Alternative 3 - Civic/cultural facilities and natural grassy amphitheater surrounded by groves of trees forming smaller meadows.

Alternative 4 - Visual open space for passive recreation with a structured outdoor amphitheater.

C. ALTERNATIVE 0: NO PROJECT

This alternative is required by state law for the purposes of environmental review. It provides a "baseline" to which the impacts of other alternatives can be compared.

The definition of this alternative assumes no project on the Waterfront planning area, and can be briefly described as follows:

1. Santa Fe lands remain in their existing state.
2. Other development would occur, including projected regional growth and plans and projects identified in surrounding areas.

The No Project alternative is shown in Figure III.C.2.

FIGURE III.C.2
GENERAL LAND USE
NO PROJECT ALTERNATIVE

D. ALTERNATIVE 1: LOW INTENSITY

This generic land use alternative represents the low end of the development scale (see Figure III.D.1). It allocates the greatest amount of land to open space. With this alternative, we can evaluate the feasibility of creating a major regional recreation resource with broad benefits to Berkeley residents. Development will be limited to the type and intensity compatible with the primary open space role. The financial costs of public improvements will be met by identifiable public funding programs while various strategies could be employed to fund operations and maintenance costs.

This alternative assumes a limited investment in recreational facilities and only basic improvements to the existing shoreline. This alternative recognizes, however, that future commitments to public funding of facilities could add substantially to the recreational program.

PATTERN, MIX AND INTENSITY OF ACTIVITIES

The pattern, mix and intensity of development is shown in the Illustrative Site Plan, Figure III.D.2. In this alternative, development is limited to one parcel of commercial recreation-oriented specialty retail, located where the City has already created an activity center - adjacent to the eastern edge of the existing Berkeley Marina. At this location, the development will reinforce the existing focus of activity and strengthen the visual definition of the Marina. This alternative recognizes that the City may choose to permit development intensification on City-owned land surrounding the Marina. Uses particularly compatible with the commercial recreation complex include hotel, conference facilities and second floor professional offices.

The remaining privately owned upland will be devoted to open space with a range of passive and active recreational uses. Most of the open space areas are assumed to be of a naturalistic, "urban wilderness" character - generally low maintenance, non-irrigated native vegetation, similar to the level of improvement of North Waterfront Park. The concept illustrated for the Meadow is a major multi-use space big enough to accommodate large gatherings, fairs, or similar celebrations. Around this central focus (shown as being the same size as the Polo Fields in Golden Gate Park) would be smaller meadows containing either structured playfields or areas for picnicking and informal games.

Development in this alternative is confined to approximately five percent of the privately held uplands. The initial program devised to test this generic concept includes 200,000 square feet of development. Development intensity is very low - only 20 percent of the site is covered by one to two story buildings, and at least half of the development parcel is landscaped open space.

FIGURE III.D.1

GENERAL LAND USE
ALTERNATIVE 1

III.D.2

FIGURE III.D.2
ILLUSTRATIVE SITE PLAN
ALTERNATIVE 1

CIRCULATION CONCEPT

As shown in the circulation diagrams, Figures III.D.3 and III.D.4, this alternative envisions three non-connected access points to the site. There would be cul-de-sac entrances at Gilman, University, and Ashby, but only-bicycle-pedestrian trails connecting from north to south (i.e., no frontage road). This circulation system reinforces the "urban wilderness" nature of the open space, making it a purposefully isolated retreat from the rest of the city.

Transit service would be the same as that now existing on the site.

DEVELOPMENT AREAS

o MARINA EDGE - 12 acres (7 plus 5 City-owned)

Uses - 200,000 square feet commercial recreation and community meeting rooms.

Activities - Boardwalk, market plaza, waterfront-related specialty retail, restaurants, community meeting and exhibition space.

Development Characteristics - Maximum height: 2 stories
Maximum coverage: 20 percent
FAR: .4
Landscaped open space: 50 percent

Parking Required - 600 cars.

OPEN SPACE IN ADDITION TO BASIC COMPONENTS

o BRICKYARD - 24 acres (10 acres plus 14 acres common to all alternatives)

Activities - Additional upland area to complement shoreline/mudflat nature preserve; possible interpretive center or similar nature-related facility.

Landscape Character - Native vegetation, very low maintenance, basic pathways connecting to parking/staging area.

Parking Required - For public access only.

o MEADOW - 64 acres (35 acres plus 29 acres common to all alternatives)

Activities - 2 to 4 structured playing fields (10 to 20 acres), major multi-use space (20 acres), smaller meadows and groves for picnicking and informal games.

FIGURE III.D.3
CIRCULATION DIAGRAM A
ALTERNATIVE 1

FIGURE III.D.4
CIRCULATION DIAGRAM B
ALTERNATIVE 1

Landscape Character - Relatively low maintenance except for turfed playing fields. More abundant planting than North Waterfront Park, to achieve sense of enclosure and definition for meadow areas.

Parking Required -

- o NORTH BASIN AND HORSE BARNS - 60 acres (41 acres plus 19 acres common to all alternatives)

Activities - Freeway buffer, possible playing fields.

Landscape Character - Native vegetation, very low maintenance, basic pathways connecting to parking/staging area at Gilman.

Parking Required - For public access only.

SUMMARY

| | | |
|--------------------------------|---|---------------------------------|
| Total Open Space Acres/Percent | - | 156 acres; 92 percent of site |
| Development Parcels | - | 7 acres plus 5 acres City-owned |
| Square Feet of Development | - | 200,000 |
| Floor Area Ratio (net average) | - | .2 to .4 |
| Average Height | - | 2 stories |

E. ALTERNATIVE 2: LOW/MODERATE INTENSITY

This generic land use alternative develops only a thin strip of land along the freeway from the Albany border to Virginia Street. See Figure III.E.1. The resulting development would provide recreation-oriented commercial development with limited employment opportunities and revenues.

Public funding is still seen as critical to the implementation of this alternative, and a more extensive recreation improvement program can be phased to take advantage of future public commitments to a shoreline regional park.

PATTERN, MIX AND INTENSITY OF ACTIVITIES

The pattern, mix and intensity of development is shown in the Illustrative Site Plan, Figure III.E.2. Approximately 60 percent of the North Basin and Horse Barn areas is designated as development parcels, specifically, a 300-room hotel north of Gilman, a 350-room hotel/conference complex south of Gilman, and 100,000 square feet of waterfront-oriented commercial uses concentrated at the Gilman entrance to the site.

This leaves a substantial amount of land to provide the link in a continuous regional shoreline trail system and park. For the purposes of the illustrative site plan, the open space of shoreline, Meadow and Brickyard are shown as naturalistic, low maintenance "urban wilderness" similar to the level of improvement of North Waterfront Park.

Development in this alternative is confined to approximately 20 to 22 percent of the privately held uplands. The program devised to evaluate this generic alternative totals 500,000 square feet. This minimal amount of buildings, when spread along the freeway frontage, results in a very dispersed type of development. Almost half of building sites would be devoted to surface parking, and heights would be one to two stories.

CIRCULATION CONCEPT

As shown in the circulation diagrams, Figures III.E.3 and III.E.4, this alternative assumes the main access points to the site would be University and Gilman, which would be connected by a frontage road similar to the existing alignment north of University. Secondary loop roads would separate development parcels from the shoreline park, in order to avoid a perception of "privatization", i.e., the open space seeming to be the front yard for development.

Ashby would end at a cul-de-sac parking/staging area serving the regional shoreline trail. Other east-west links to the trail would occur at Gilman and at Aquatic Park.

FIGURE III.E.1
GENERIC LAND USE
ALTERNATIVE 2

FIGURE III.E.2
ILLUSTRATIVE SITE PLAN
ALTERNATIVE 2

FIGURE III.E.3
CIRCULATION DIAGRAM A
ALTERNATIVE 2

FIGURE III.E.4
CIRCULATION DIAGRAM B
ALTERNATIVE 2

The existing AC Transit route 51 down University could be supplemented by extending service along the frontage road and Gilman Street and then to return to University Avenue.

DEVELOPMENT AREAS

o NORTH BASIN AND HORSE BARN - 37 acres

Uses - 300-room hotel, 100,000 square foot commercial recreation at Gilman entrance to site, 350-room dispersed hotel/conference facility.

Activities - Boardwalk, market plaza, waterfront-related specialty retail and restaurant, boat rental and similar marine concessions/services.

Development Characteristics - Maximum height: 2 stories
Maximum coverage: 25 percent
FAR: .2 to .4
Landscaped open space: 50 percent

Parking Required - 1,050 cars.

OPEN SPACE IN ADDITION TO BASIC COMPONENTS

o BRICKYARD - 24 acres (10 acres plus 14 acres common to all alternatives)

Activities - Additional upland area to complement shoreline/mudflat nature preserve; possible interpretive center or similar nature-related facility.

Landscape Character - Native vegetation, very low maintenance, basic pathways connecting to parking/staging area.

Parking Required - For public access only.

o MEADOW - 70 acres (41 acres plus 29 acres common to all alternatives)

Activities - 2 to 4 structured playing fields (10 to 20 acres), remainder to be naturalistic "wilderness park" similar to North Waterfront Park.

Landscape Character - Native meadow grasses and vegetation, relatively few trees, very low maintenance except for turfed playing fields.

Parking Required - For public access only.

SUMMARY

| | | |
|--------------------------------|---|-------------------------------|
| Total Open Space Acres/Percent | - | 124 acres; 73 percent of site |
| Development Parcels | - | 37 acres |
| Square Feet of Development | - | 500,000 |
| Floor Area Ratio (net average) | - | .3 to .4 |
| Average Height | - | 2 stories |

F. ALTERNATIVE 3: MODERATE INTENSITY

This generic land use alternative adds commercial development along the freeway boundary of the waterfront to the site identified in Alternative 1. See Figure III.F.1. In this alternative, there is sufficient development intensity to provide a viable new residential community integrated in a mixed-use development prototype. This alternative retains a continuous shoreline park and a major public open space in the central meadow.

PATTERN, MIX AND INTENSITY OF ACTIVITIES

The pattern, mix and intensity of development is shown in the Illustrative Site Plan, Figure III.F.2. In this alternative, mixed-use development is distributed along the freeway boundary and adjacent to the Berkeley Marina. The concept recognizes the primary activity center at the Marina but adds a development zone that buffers the shoreline park from the freeway. The street pattern east of the freeway is extended across the freeway, each block contains housing on the water side and an office buffer on the freeway side. Development fronts on both sides of University Avenue, with a landmark-quality hotel at the entrance to the site on the East Brickyard. In this way, the waterfront will be more fully integrated into the existing fabric of the City.

The Meadow park serves as the focal point tying together all components of this alternative. It is envisioned as a civic/cultural park complementing and contrasting with the "urban wilderness" on North Waterfront Park and the extensive passive shoreline park areas. The Meadow would strongly link the other park areas, and would also provide a link between Marina activities and development along the freeway, in the form of civic/cultural facilities such as meeting rooms, an exhibition hall, and possible theater or museum buildings.

Development in this alternative covers approximately 35 to 37 percent of the privately held uplands, framing and defining the park areas. The initial program devised to test this generic alternative is approximately 2.23 million square feet. Development intensity is very low on the visually sensitive Marina Edge and Brickyard sites - maximum coverage of 20 to 25 percent, 50 percent landscaped open space, and all surface parking. Site coverage and intensity along the freeway is approximately half that existing in typical downtown Berkeley blocks. Average height is the same as the interim controls east of the freeway, at 45 feet, i.e., 3 to 4 stories. However, as in downtown and the University Avenue corridor, heights of up to six stories would be allowed with a conditional use permit.

CIRCULATION CONCEPT

As shown in the circulation diagrams, Figures III.F.3 and III.F.4, this alternative includes access at University, Gilman, and Ashby. In order to discourage diversion of freeway traffic onto the frontage road, north/south routes are tailored to local access rather than through access. The shoreline drive is curved and includes curbside parking to serve the park. There are secondary loop roads defining the eastern edge of development parcels, and providing the "front door" to the office development.

FIGURE III.F.1
GENERIC LAND USE
ALTERNATIVE 3

FIGURE III.F.2
ILLUSTRATIVE SITE PLAN
ALTERNATIVE 3

FIGURE III.F.3

CIRCULATION DIAGRAM A
ALTERNATIVE 3

III.F.5

FIGURE III.F.4
CIRCULATION DIAGRAM B
ALTERNATIVE 3

The pattern of east-west streets across the freeway is extended out to the waterfront. These local streets would provide view corridors through development, and would also serve as parking, service, and pedestrian access routes. There would be mid-block easements from north to south through development parcels, also serving as pedestrian and/or service access routes. The shoreline bike/pedestrian trail would be linked to the rest of the city at Gilman, Virginia, and Aquatic Park.

The existing AC Transit route 51 to the waterfront could be supplemented by extending local service along the frontage road and Gilman Street, and by adding regional north-south bus service via the freeway.

DEVELOPMENT AREAS

o EAST BRICKYARD - 8 to 10 acres

Uses - 230,000 square feet landmark hotel/conference center.

Activities - Public-oriented facility appropriate to the strategic position at the entrance to the site, and complementary to the adjacent shoreline/mudflat natural habitat. Potential joint development with state participation and/or monetary contribution to improvement of adjacent open space.

Development Characteristics - Maximum height: 3 to 4 stories
Maximum coverage: 20 percent
FAR: .6
Landscaped open space: 50 percent

Parking Required - 350 cars.

o MARINA EDGE - 13 acres (7 acres plus 5 City-owned)

Uses - 200,000 square feet hotel/commercial recreation.

Activities - 250-room hotel; 35,000 square feet retail/restaurant along marina-side boardwalk.

Development Characteristics - Maximum height: 3 stories
Maximum coverage: 25 percent
FAR: .3
Landscaped open space: 50 percent

Parking Required - 300 cars.

o NORTH BASIN - 15 to 20 acres (in 3 to 5 acre parcels)

Uses - 705,000 square feet mixed office/residential.

Activities - 350 housing units (average 800 square feet per unit); density +40 dwelling units per acre, mix of unit types to correspond to Berkeley's existing housing characteristics; 425,000 square feet office as freeway buffer.

Development Characteristics - Maximum height: 40 feet for housing;
65 feet for office
Maximum coverage: 55 percent
FAR: 1.0
Landscaped open space: 30 percent
Parcelization corresponding to block pattern east of freeway
Mid-block easement for views and pedestrian ROW

Parking Required - 1,400 cars.

o HORSE BARNS - 16 acres (in 2 to 3 parcels)

Uses - 670,000 square feet mixed office/residential.

Activities - 310 housing units (average 800 square feet per unit); density +40 dwelling units per acre, mix of unit types to correspond to Berkeley's existing housing characteristics; 420,000 square feet office as freeway buffer.

Development Characteristics - Maximum height: 40 feet for housing;
65 feet for office
Maximum coverage: 55 percent
FAR: 1.0
Landscaped open space: 30 percent
Parcelization corresponding to block pattern east of freeway
Mid-block easement for views and pedestrian ROW

Parking Required - 1,360 cars.

o EAST MEADOW - 10 to 12 acres

Uses - 532,000 square feet mixed office/residential.

Activities - 290 housing units (average 800 square feet per unit); density +40 dwelling units per acre, mix of unit types to correspond to Berkeley's existing housing characteristics; 300,000 square feet office as freeway buffer.

Development Characteristics - Maximum height: 40 feet for housing;
65 feet for office
Maximum coverage: 55 percent
FAR: 1.0
Landscaped open space: 30 percent
Parcelization corresponding to block pattern
east of freeway
Mid-block easement for views and
pedestrian ROW

Parking Required - 1,040 cars.

OPEN SPACE IN ADDITION TO BASIC COMPONENTS

- o MEADOW - 50 acres (21 acres in addition to 29 acres common to all alternatives)

Activities - 2 structured playing fields (10 acres), smaller meadows and groves for picnicking and informal games, grassy bowl-shaped outdoor amphitheater, bandshell, glass conservatory, civic/cultural structures such as exhibition hall, meeting rooms, theater, museum (50,000 to 150,000 square feet).

Landscape Character - Low-maintenance meadow grasses for amphitheater and informal playing fields; turf for structured playing fields; relatively dense planting to define enclosed spaces and establish wind-protected areas; more retaining walls, hardscape, and ornamental planting than other meadow concepts.

Parking Required - For public access only.

SUMMARY

| | |
|--------------------------------|--|
| Total Open Space Acres/Percent | - 97 acres; 57 percent of site |
| Development Parcels | - 60 to 63 acres plus 5 acres City-owned |
| Square Feet of Development | - 2,300,000 |
| Floor Area Ratio (net average) | - .75 to .9 |
| Average Height | - 3 to 4 stories (maximum 6) |

G. ALTERNATIVE 4: HIGH INTENSITY: SANTA FE PLAN

This generic land use alternative was presented to the City by the property owner, Santa Fe Land Improvement Company. See Figure III.G.1. Although total land coverage is similar to Alternative 3, it represents the high range of intensity in the generic alternatives. This alternative adds development in the North Meadow area adjacent to the North Basin. It also includes a land use designation of public access easement within a general open space plan.

PATTERN, MIX AND INTENSITY OF ACTIVITIES

The pattern, mix and intensity of development is shown in the Illustrative Site Plan, Figure III.G.2. In this alternative, hotel, office, research and development (R&D), and support retail development is concentrated around the North Basin, and there is a conference center and specialty retail complex at the Marina Edge. The development parcels are shown in large unsubdivided units, with public open spaces and a continuous shoreline trail system following the water's edge, with the exception of the public access easement promenade along the shoreline of the North Meadow. The center of focus for the Meadow is the 24-acre Berkeley "Crescent" public access easement, to be landscaped and maintained by the property owner as open space for passive enjoyment. The Brickyard area is not developed, but rather remains in private ownership with a public access easement.

Development in this alternative covers approximately 40 percent of the privately held uplands. The development program proposed by the property owner totals 4.15 million square feet, including the 150,000 square foot "marina plaza" commercial recreation/conference center development on land to be consolidated in City ownership at the eastern edge of the Berkeley Marina. The intensity of development ranges from very low at the Marina Edge to as high as San Francisco's Levi Plaza in the East Meadow area. Heights average five to six stories, with a maximum of 100 feet, again in the East Meadow. Average development intensity is comparable to the overall average intensity that currently exists in Berkeley's downtown district.

CIRCULATION CONCEPT

As shown in the circulation diagrams, Figures III.G.3 and III.G.4, access points at Gilman, University, and Ashby would be linked by a frontage road forming the eastern boundary of development, and a shoreline drive. Both of these arterials would tie into the road around Berkeley Crescent, as would a diagonal local road linking to North Waterfront Park.

The waterfront bike/pedestrian network would be tied back to the city at Gilman and Aquatic Park. Existing AC Transit routes would be supplemented by a shuttle to the North Berkeley BART station, a regional bus route along the freeway, and extended local service along the North Basin and Gilman Streets.

FIGURE III.G.1

GENERIC LAND USE
ALTERNATIVE 4

III.G.2

FIGURE III.G.2
ILLUSTRATIVE SITE PLAN
ALTERNATIVE 4

FIGURE III.G.3
CIRCULATION DIAGRAM A
ALTERNATIVE 4

FIGURE III.G.4
CIRCULATION DIAGRAM B
ALTERNATIVE 4

As part of its plan, Santa Fe proposes a Transportation Systems Management (TSM) program to reduce peak-hour automobile trip generation.

DEVELOPMENT AREAS

o MARINA EDGE - 10 acres (5 acres plus 5 acres City-owned)

Uses - 150,000 square feet specialty retail and conference.

Activities - Waterfront shops, restaurants and galleries, ferry landing, civic plaza, market place, public conference center.

Development Characteristics - Maximum height: 35 to 75 feet
Maximum coverage: 50 percent
FAR: .23
Landscaped open space: 25 percent minimum

Parking Required - 550 cars (300 identified on parcel plan in December 1983 Master Plan Amendment - withdrawn).

o NORTH MEADOW - 15 acres (includes 4 acres public access easement along North Basin)

Uses - 955,000 square feet hotel, office, support retail.

Development Characteristics - Maximum height: 50 to 75 feet
Maximum coverage: 50 percent
FAR: 1.4
Landscaped open space: 25 percent minimum.

Parking Required - +1,500 cars.

o EAST MEADOW - 10 acres

Uses - 850,000 square feet hotel, office, support retail.

Development Characteristics - Maximum height: 50 to 100 feet
Maximum coverage: 75 percent
FAR: 2.03
Landscaped open space: 25 percent minimum.
Parcelization not specified

Parking Required - +1,700 cars.

o NORTH BASIN - 24 acres

Uses - 1,215,000 square feet office, R&D, support retail.

Development Characteristics - Maximum height: 50 to 75 feet
Maximum coverage: 50 percent
FAR: 1.2
Landscaped open space: 25 percent minimum
Parcelization not specified

Parking Required - +3,000 cars (2,800 shown on parcel plan in December 1983 Master Plan Amendment - withdrawn).

o HORSE BARNs - 16 to 17 acres

Uses - 1,080,000 square feet office, R&D, support retail.

Development Characteristics - Maximum height: 50 to 75 feet
Maximum coverage: 75 percent
FAR: 1.5
Landscaped open space: 25 percent minimum
Parcelization not specified

Parking Required - 2,700 cars (2,450 shown on parcel plan in December 1983 Master Plan Amendment - withdrawn).

OPEN SPACE IN ADDITION TO BASIC COMPONENTS

o BRICKYARD - 24 acres (10 acres plus 14 acres common to all alternatives)

Activities - Interpretive Center, additional upland area to complement shoreline/mudflat nature preserve.

Landscape Character - Native vegetation, very low maintenance, basic pathways connecting to parking/staging area.

Parking Required -

SUMMARY

| | | |
|--------------------------------|---|----------------------------------|
| Total Open Space Acres/Percent | - | 81 acres; 47 percent of site |
| Development Parcels | - | 71 acres plus 5 acres City-owned |
| Square Feet of Development | - | 4,150,000 |
| Floor Area Ratio (net average) | - | 1.44 |
| Average Height | - | 5 to 6 stories (maximum 10) |

40191g/BBCCTAA

BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Land Use, Community Design, and Visual Considerations

Prepared by ROMA Design Group

V. EVALUATION OF ALTERNATIVES

A. LAND USE, COMMUNITY DESIGN, AND VISUAL CONSIDERATIONS

Introduction

The existing land use, policy, and visual setting have been described in the Background Analyses of January 1985. This assessment will discuss alternatives according to how well each satisfies the following revised evaluation criteria (Council version, January 1985):

1. Reinforcement of the history, scale and character of development within Berkeley.
2. Creation of an environment which enhances the unique qualities of Berkeley's waterfront and its special meaning to the city and region by:
 - o emphasizing the waterfront's strategic location in San Francisco Bay and its relationship to the Golden Gate;
 - o emphasizing the waterfront's functional and symbolic role as a gateway and meeting place; and
 - o establishing a scale and intensity of development which is compatible with the open space qualities of the Bayfront environment.
3. Protection and enhancement of vistas and view corridors to and from the waterfront.
4. Limiting the negative visual impacts of parking.
5. Creation of a framework which encourages the type and quality of development which will:
 - o be visually interesting and attractive both at the ground level and at a distance;
 - o fulfill functional and operational requirements of development; and
 - o be financially feasible.
6. Creation of an attractive and safe pedestrian environment which promotes bicycle use and barrier-free accessibility.
7. Buffering noise and air quality impacts of the freeway.
8. Overcoming the barrier created by the freeway which visually and physically separates Berkeley from its waterfront.
9. Consistency with existing land use planning policies.

Table V.A.1 summarizes qualitatively how each alternative compares against the criteria for land use, community design and visual considerations.

TABLE V.A.1: SUMMARY OF LAND USE, COMMUNITY DESIGN, AND VISUAL CONSIDERATIONS

| <u>Criterion</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------|---------------|---------------|---------------|---------------|
| 1 | X | X | + | - |
| 2 | X | - | + | - |
| 3 | X | +- | +- | - |
| 4 | X | X | X | X |
| 5 | X | -- | X | + |
| 6 | X | X | + | X |
| 7 | - | X | X | X |
| 8 | - | X | + | - |
| 9 | X | X | X | -- |

Key: ++ most fulfills criterion
 + more than fulfills criterion
 X meets but does not exceed criterion
 - does not fulfill criterion
 -- least fulfills criterion
 +- fulfills one part or measure of a criterion but fails to meet another aspect

CRITERION 1: REINFORCEMENT OF EXISTING SCALE, CHARACTER, AND DIVERSITY

This topic refers to both the immediate surroundings of the site and the larger context of the city's special scale, character, and socioeconomic diversity. The optimum land use plan according to this criterion would be the one most consistent with Berkeley height limits and development intensity, with a fine "grain" (block pattern and typical size of development parcel), a rich mix of activities serving a wide variety of age and income groups, and an effort to make appropriate linkages to adjacent uses, including future proposals for the Albany waterfront lands.

The optimum land use plan would respect the role of downtown as the highest intensity, most densely developed area of the city, and would correspond more to the intensity of secondary commercial or mixed-use areas (e.g., the West Berkeley Redevelopment Area). Ideally, it would have strong links to, and beneficial spinoff effects upon, the neighborhoods east of the freeway.

The optimum land use plan would encourage development in relatively small increments and with an integrated mix of uses, rather than large single-purpose blocks or parcels. It would include uses that create day and night activity (and thus built-in security), such as hotel, housing, and entertainment.

Table V.A.2 compares the four alternatives with several existing commercial areas, in terms of four measures of scale, character, and intensity of development.

TABLE V.A.2: SCALE/CHARACTER COMPARISON

| | <u>S.F.</u> <u>(millions)</u> | <u>Intensity</u> <u>(FAR)</u> <u>per Block</u> | <u>Height</u> <u>(Avg./Max.)</u> | <u>Parcel</u> <u>Coverage</u> <u>(Avg./Max.)</u> |
|-------------------------------------|----------------------------------|--|-------------------------------------|--|
| Berkeley Downtown (C-2) | 3.0-3.5 | 1-2 | 3-4 (max. 100') | 90/100% |
| University Avenue Corridor (C-1) | n.a. | .5-1 | 2 (max. 50')/a/ | 50/100% |
| West Berkeley Redevelopment Area | n.a. | .5-1 | 2 (max. 50') | 50/70% |
| Waterfront Alt. 1 | .2 | .2-.4 | 2 stories | 20% |
| Waterfront Alt. 2 | .5 | .2-.4 | 2 stories | 25% |
| Waterfront Alt. 3 | 2.3 | .3-1.0 | 3-4 (max. 65') | 40% (max. 55%) |
| Waterfront Alt. 4 | 4.1 | .3-2.0 | 4-6 (max. 75-100') | 50% (max. 75%) |

/a/ Use permit to six stories, or 75 feet.

Alternative 1

Alternative 1 includes only one small development parcel, which neither violates nor particularly reinforces the neighborhood and city context. The Marina Edge commercial development is of an even lower scale and intensity than that of many other secondary commercial areas in Berkeley. However, it is so isolated by the freeway and extensive open space that it cannot be said that this alternative really "reinforces" the rest of the city in any way.

Alternative 2

Alternative 2 also does not particularly recall Berkeley's scale, character and diversity. There is not a rich mix of uses, nor an integration of uses within smaller blocks as is typical of other areas of the city.

Alternative 3

Alternative 3 exhibits the strongest compatibility with the adjacent context, since it not only extends the block pattern but creates a mix of uses on each block, as is typical in the neighborhood east of the freeway. The intensity of this alternative is about half that of existing downtown blocks; average heights in the North Basin and Horse Barns correspond to the height limits across the freeway. Maximum height is six stories, similar to that allowed by use permit in C-1 areas such as the University Avenue Corridor.

Alternative 4

Alternative 4 includes a major proportion of regionally-oriented office/research and development (R&D). The heavy emphasis on this narrow segment of uses is a complete departure from the fine-grained mixed-use patterns in the rest of Berkeley. The height and intensity of development are more similar to downtown than to the neighborhood east of the freeway.

CRITERION 2: CREATION OF A UNIQUE WATERFRONT ENVIRONMENT

This criterion implies both the larger perspective of evolving the functional, symbolic, and strategic locational role of the site, and the more specific "appropriateness" in terms of fitting development to the waterfront setting and microclimatic conditions. The latter, more specific items would be ensured by urban design guidelines which should be written for the preferred alternative. The larger symbolic and strategic view is addressed below.

Alternative 1

Alternative 1 does recognize the importance of an appropriate terminus to the strong east-west axis of University Avenue as Berkeley's connection to the water. It marks this strategic corridor with an activity center at the Marina Edge, and a highly visible and recognizable major open space and gathering place in the Meadow. However, the remainder of the waterfront

lands would be an isolated and hard-to-reach area across the freeway, more of the same type of open space as that already envisioned for the 90-acre North Waterfront Park.

Alternative 2

Alternative 2 neither emphasizes the waterfront as a gathering place nor addresses its important role as the "gateway" to the city from the water. There is no recognition of University Avenue as a strategic corridor; the Meadow is not a particularly recognizable or special place, but rather more of the same type of open space as North Waterfront Park.

Alternative 3

Alternative 3 corresponds most strongly to the special waterfront image of "gathering place", largely because of the concept of the Meadow as a civic/cultural hub as well as a park. The University axis is marked by a landmark-quality hotel at the entrance to the site, and terminated at the Marina Edge activity concentration, both appropriate to their strategic locations.

Alternative 4

Alternative 4 does provide a visual terminus to the east-west University axis, in the form of the clearly recognizable Berkeley Crescent. However, being only an access easement, this open space by definition could not serve as a true gathering place for the city.

This alternative effectively creates a "second downtown" - a major new regional-scale commercial development - at the point where the city meets the water.

CRITERION 3: PROTECTION AND ENHANCEMENT OF VIEWS

There are four categories of views identified in the Opportunities and Constraints Analysis, ROMA, January 28, 1985:

1. Views from the Berkeley Hills to the Bay
2. Views from waterfront open space back to the hills
3. View corridors from the city through the site to the water
4. "Gateway" views from freeway and overpasses

As described in the Opportunities and Constraints Analysis, the views from the hills to the waterfront are not the most constraining factors in determining appropriate location and height of development, since views of the Bay and key regional features are not blocked by development as high as 100 feet, even from the lowest elevation view impact zone. Therefore, no alternative significantly blocks key views from the hills to the Bay.

The more important constraint on heights is maintaining views from the site back toward the hills. This implies maintaining a low profile for on-site development - only high enough to screen the freeway and unattractive foreground industrial development, but not so high as to obscure the hillsides as seen from North Waterfront Park and the Marina. The highest freeway elevations are approximately 30 feet at the Gilman and University interchanges. The existing height of industrial development east of the freeway is predominantly one to three stories, but occasionally reaches up to 100 feet. The interim height limit for these industrial areas is 45 feet, and for the Redevelopment Area ranges from 35 to 50 feet. Refer to Figure V.A.1 for an illustration of typical views from the waterfront back toward the hills (Figure V.A.6, prepared by Santa Fe Land Improvement Company, is a photomontage of Alternative 4 superimposed on the view to the Berkeley Hills).

A number of important view corridors are established by the existing street grid. The most important is the University Avenue view cone to the Marina, and the Bay beyond (see Figure V.A.2). The Gilman corridor is second in importance because it is a major entrance to the site (see Figure V.A.3). The Cedar view corridor is blocked by the freeway structure at lower elevations, but is important at higher elevations, as are most of the east-west streets (Figure V.A.4). The massing of development on the waterfront should respond to these view corridors to the Bay.

The last category of important views is those from the freeway and overpasses. By far, the most important is the "gateway" view upon entering the site at the University overpass, where a panoramic view of the site and the Bay Bridge opens up to the motorist (see Figure V.A.5).

The Interstate 80 freeway improvement alternatives now being studied as a separate component of this analysis will also affect views. See other sections of this evaluation.

Alternative 1

Alternative 1 includes only one parcel of development; it is of a low intensity and height which respects the visual sensitivity of the University Avenue view cone.

Alternative 2

Alternative 2 does not block any views, being as low as the lowest development east of the freeway. However, its large development parcels fail to acknowledge the east-west view corridors as special in any way.

Alternative 3

Alternative 3 respects visually sensitive areas; development in the University Avenue view cone is kept to two stories, and the "gateway" to the site is accentuated by a landmark-quality hotel on the eastern Brickyard. However, the proposed three to four story height will be higher than the elevation of the existing University overpass; thus, the hotel could potentially block portions of the panoramic view at the entrance to the site.

FIGURE V.A.1

VIEW FROM SITE TO BERKELEY HILLS:
SHOWING HEIGHT OF DEVELOPMENT EAST OF FREEWAY

FIGURE V.A.2

UNIVERSITY AVENUE AT MARTIN LUTHER KING (ELEVATION +270'):
SIGNIFICANT VIEW CORRIDOR TO BE MAINTAINED —

FIGURE V.A.3

GILMAN AT SANTA FE STREET (ELEVATION +75'):
TYPICAL EAST-WEST VIEW CORRIDOR

FIGURE V.A.4

CEDAR AT SHATTUCK (ELEVATION +240'):
TYPICAL EAST-WEST VIEW CORRIDOR

FIGURE V.A.5

UNIVERSITY AVENUE AT INTERSTATE 80 OVERPASS (ELEVATION +30'):
SIGNIFICANT VIEWS TO BE MAINTAINED

FIGURE V.A.6

PHOTOMONTAGE OF ALTERNATIVE 4:
VIEW FROM NORTH WATERFRONT PARK TO BERKELEY HILLS

Source: Hall Goodhue Haisley and Barker for Santa Fe Land Improvement Company, March 1985

Heights along the North Basin and Horse Barns camouflage the unattractive foreground freeway and industrial development as seen from the waterfront, but do not obscure views of the hills. Finally, extension of public rights-of-way continuing the street pattern ensures that east-west views from the neighborhoods, across the freeway, will not be blocked.

Alternative 4

Alternative 4 shows the extension of east-west view corridors in its illustration, but does not reserve them as public easements or rights-of-way; thus, it could potentially block these view corridors with development.

Heights in this alternative are 50 to 75 feet along the North Basin, and as high as 100 feet in the East Meadow, with maximum coverage of 50 to 75 percent. This compares with existing height limits of 35 to 50 feet adjacent to the site east of the freeway. As shown in Figure V.A.6, the amount of bulk allowed in this alternative could significantly block east-west views from the site to the hills.

Table V.A.3 summarizes the comparison of alternatives with regard to each of the four view categories.

TABLE V.A.3: SUMMARY VIEW COMPARISON

| <u>Categories of Views</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|----------------------------|---------------|---------------|---------------|---------------|
| 1. Hills to Bay | X | X | X | X |
| 2. Site to Hills | X | + | + | - |
| 3. View Corridors | X | - | + | - |
| 4. "Gateway" Freeway Views | X | X | - | X |

Key: ++ most fulfills criterion
 + more than fulfills criterion
 X meets but does not exceed criterion
 - does not fulfill criterion
 -- least fulfills criterion
 +- fulfills one part or measure of a criterion but fails to meet another aspect

CRITERION 4: LIMITING NEGATIVE IMPACTS OF PARKING

Both surface lots and structured parking can harm the attractiveness and pedestrian quality of a project if they cover large areas and/or are not sensitively designed and landscaped.

Tables V.A.4 and V.A.5 compare the amount of parking required to serve development in each alternative, and the subsequent text will describe how the parking is made less obtrusive by screening or incorporating it within development.

The land area required to provide the necessary parking will depend on:

- o the amount of development
- o the parking ratios utilized
- o the amount of structured vs. surface parking
- o the height of the parking structures (number of levels)
- o the efficiency of the parking structures

Each of these factors can significantly affect the calculation of land required, and since parking structures can be variously integrated with development to obscure its visual impact, the amount of land required is not a complete measure of the community design impacts of parking.

Table V.A.6 indicates the amount of land utilized for parking in each alternative. The range is from 4 percent to 17 percent of the entire land area in the Waterfront. The potential variability in alternatives 3 and 4, where parking structures are extensively utilized, could be significant. The range of mitigation options, however, is equally large.

TABLE V.A.4: PARKING SPACE DEMAND FOR ALTERNATIVES

| | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------------------|---------------|---------------|---------------|---------------|
| DEVELOPMENT SERVING | | | | |
| -Structured spaces | 0 | 0 | 4,100 | 8,900 |
| -Surface spaces | 400-600 | 1,050 | 240-320 | 550 |
| <u>OPEN SPACE SERVING/a/</u> | <u>360</u> | <u>285</u> | <u>225</u> | <u>185</u> |
| TOTAL | 760-960 | 1,335 | 4,565-4,645 | 9,635 |

/a/ In all alternatives, there is a potential for joint use of parking facilities between open space and development demands that could reduce the demand, depending on convenience and management.

TABLE V.A.5: ASSUMED PARKING RATIOS/a/

| | |
|-----------------------------------|--|
| Office and Research & Development | 2.5 spaces per 1,000 s.f. |
| Commercial Retail | 2.5 spaces per 1,000 s.f. |
| Hotel | 0.8 spaces per room |
| Residential | 1.0 space per unit + 0.5 off-street guest spaces per unit |
| Conference Center | 300 spaces per 50,000 s.f. of conference center space |
| General Open Space | 2.3 spaces per acre of recreational open space |

/a/ See Transportation section for discussion of parking demand and phasing.

TABLE V.A.6: LAND REQUIREMENTS FOR PARKING (ACRES)

| | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|-----------------------|---------------|---------------|---------------|---------------|
| Development Serving | | | | |
| -In structure | 0 | 0 | 18.04/a/ | 20.22/b/ |
| -Surface | 3.79 | 6.74 | 4.09 | 6.70 |
| Open Space Serving | | | | |
| -Surface | <u>2.73</u> | <u>2.16</u> | <u>1.70</u> | <u>1.40</u> |
| Total | 6.52 | 8.90 | 23.83 | 28.32 |
| Percent of Total Site | 4% | 5% | 14% | 17% |

/a/ Assumes 330 square feet per space for surface parking and for parking in structure. Parking structures vary by alternative. See description of alternative.

/b/ The Santa Fe land use proposal assumes 270 square feet per space for parking in structure.

Alternative 1

Alternative 1 includes extensive landscaping of the approximately five acres of surface parking needed to serve the Marina Edge activity center. The open space-serving parking would be provided in small lots located strategically to the Gilman Street access, in the Meadow area, and at the Brickyard.

Alternative 2

Alternative 2 requires approximately eight acres of surface parking to serve the development program. This is approximately the same amount of land as will be covered by buildings. In order to avoid the impression of a "sea of parking", these lots would have to be very extensively landscaped.

The open space-serving parking would be provided in small lots dispersed along the shoreline road and in larger lots along University Avenue and Marina Way.

Alternative 3

Alternative 3 includes only a small amount of surface parking to serve the development program. Approximately 90 percent would be structured parking of 2 to 3 stories, which greatly reduces the amount of land devoted to parking, and allows much more opportunity for hiding parking within other development or landscaping.

The development prototypes evaluated would permit ground floor office or retail development to be integrated into up to 50 percent of the perimeter of the parking structures, thereby screening the parking from public right-of-ways.

The open space-serving parking would be provided in small lots dispersed along the shoreline road and in larger lots at the perimeter of the central meadow. Parking to serve a major civic/cultural complex and conference center at the meadow may be integrated into parking structures in the adjacent development areas in the east meadow and Marina Plaza area.

Alternative 4

Alternative 4 includes many measures to limit the amount and the adverse visual impacts of parking. A reduction in parking from the 9,450 cars estimated in the preceding table to be required to serve the private development to 8,750 cars illustrated in the Santa Fe land use plan is attributed to measures such as shared parking. In addition, the Santa Fe proposal reduces required garage area per car from the 330 square feet per space assumed above to 270 square feet per space, on the rationale that all hotel parking will be valet service, and there will be a greatly reduced average car size in the future. These changed assumptions allow Santa Fe to illustrate parking as being of less than three levels in height. This would compare with the average 3.6 levels of garage that would be necessary by the same assumptions used for the other alternatives. Alternatively, if the same assumptions were used but garages were limited to the three levels claimed by Santa Fe, there would only be enough parking to serve approximately 3.3 million square feet of development, as compared with the 4.1 million square feet proposed.

The illustrative drawing shows extensive landscaping of parking, and depicts garages as being well integrated within other development, rather than a "wall of parking" along the freeway. However, to ensure that this effect was really achieved, it would be necessary to regulate development by means of explicit design guidelines and more complete development standards than those contained in Santa Fe's proposal.

CRITERION 5: PRIVATE DEVELOPMENT LOCATIONAL/OPERATIONAL REQUIREMENTS

The optimum plan must work not only from a public open space and access perspective, but just as importantly from the point of view of desirable locations for private development. Otherwise, the overall quality of the resulting waterfront environment will suffer.

To make a parcel suitable for private development, it must have several qualities:

- o appropriate size and configuration for a marketable amount and intensity of development
- o accessibility/visibility to prospective clients and visitors
- o amenity value (e.g., views, quiet environment, adjacency to appropriate complementary activities)
- o sufficient development potential to balance site preparation, infrastructure, and construction costs

The relative importance of these factors differs according to the prospective use. For instance, a hotel would place a high priority on views, whereas a specialty retail center most requires accessibility and proximity to complementary activities, and housing must have a relatively quiet environment.

Alternative 1

Alternative 1 chooses the best location for its limited amount of commercial development, i.e., building on the existing activity concentration at the Marina.

Alternative 2

Alternative 2 contains elements poorly suited to the locational preferences of development. Specifically, the North Basin parcel is not appropriate for a hotel/conference center, nor for development of such low intensity. One hotel dispersed over such a long distance is not cohesive; a greater mix and intensity of uses for this parcel would significantly improve the likelihood of attracting quality development.

Secondly, the Gilman location for a commercial/recreational complex is inferior to the Marina Edge, because this type of development would greatly benefit from, and in turn enhance, the Marina activities.

Alternative 3

From the point of view of locational determinants for private development, Alternative 3 is a very workable alternative, including the real potential to create an attractive new residential neighborhood, protected from the adverse influence of the freeway, and greatly increasing the level of activity and the vitality of the shoreline open space.

Alternative 4

Alternative 4 rates highest in attractiveness from the point of view of private development because it emphasizes the most marketable and profitable uses, and creates an implementation scenario well suited to economic feasibility from the private developer's point of view. For instance, it assumes that the substantial costs of improvements to the shoreline open space would be carried by the public. Conversely, it retains several key open space parcels in private ownership, to ensure that they will create an attractive setting for private development.

Table V.A.7 rates the various development prototypes with regard to locational desirability for private development.

Table V.A.7 illustrates that, from the point of view of creating the greatest amount of private value for the least amount of development, the most desirable prototypes are the Brickyard landmark-quality hotel, the Marina Edge commercial or hotel developments, and regionally-oriented flexible-floor office space. The least attractive use by far, from a private development feasibility perspective, is the North Basin Hotel/Conference prototype.

TABLE V.A.7: COMPARISON AGAINST DEVELOPMENT LOCATIONAL/OPERATIONAL REQUIREMENTS

| | <u>Market- ability</u> | <u>Access- ibility</u> | <u>Visi- bility/ Exposure</u> | <u>Good Views</u> | <u>"Synergy" with Adja- cent Uses</u> |
|--|----------------------------|----------------------------|---------------------------------------|-----------------------|---|
| A. Marina Retail Commercial | + | + | + | + | ++ |
| B. Horse Barn Hotel | - | + | + | + | ? (Albany) |
| C. North Basin Hotel/Conf. | -- | X | - | -- | - |
| D. Brickyard Hotel | ++ | + | ++ | ++ | X |
| E. Marina Hotel/Commercial | + | + | X | + | ++ |
| F. Santa Fe Hotel (max. 10 stories) | ++ | + | X | X | + |
| G. North Basin Housing | X | X | X | X | + |
| H. Office, separate parking | + | X | + | X | X |
| I. Office, over parking | + | X | + | X | X |
| J. Santa Fe Office (max. 6 stories) | +++ | + | + | X | X |

Key: ++ most fulfills criterion
+ more than fulfills criterion
X meets but does not exceed criterion
- does not fulfill criterion
-- least fulfills criterion
+- fulfills one part or measure of a criterion but fails to meet another aspect

CRITERION 6: ATTRACTIVE AND SAFE PEDESTRIAN ENVIRONMENT

This criterion implies not only barrier-free access with abundant bicycle trails and a pleasant, walkable ground-level environment, but also touches upon safety and security issues. All of the alternatives can fulfill the first three components, assuming that explicit design guidelines require that development truly resembles the illustrative sketches. The last issue, security, is a somewhat different story, since it depends heavily on the differing uses and the resulting timing and intensity of activity.

Alternative 1

Alternative 1 would make the Marina more of a day and evening activity center, but the remainder of the waterfront would only be active during the day and mainly during good weather.

Alternative 2

Alternative 2 creates day and evening activity along the North Basin, but leaves the Meadow and Marina relatively isolated.

Alternative 3

Alternative 3 enlivens the Marina with a new hotel, increasing the intensity and extending the hours of activity there. The Meadow would also be well used during the daytime and sometimes evening, because of the outdoor amphitheater and other cultural activities. The North Basin would be a true neighborhood and the new residents would lend vitality and full-time surveillance to the shoreline open space.

Alternative 4

Alternative 4, in addition to the Marina Edge activity center, includes a number of hotels in the Meadow that would contribute to extended evening-hour activity. However, along the North Basin is a single-use concentration (office/R&D) that would only be active during working hours.

CRITERION 7: BUFFERING NOISE AND AIR QUALITY IMPACTS OF FREEWAY

The noise and air quality setting is discussed in later sections of this report. It will be discussed below in the limited sense of how well the various alternatives limit the freeway's negative effects on open space and on the more sensitive land uses.

Alternative 1

Alternative 1 leaves all the area adjacent to the freeway as open space, the quality of which would be degraded by being adjacent to the freeway. Dense freeway landscaping, berming, or sound walls could mitigate these negative effects to some degree.

Alternative 2

Alternative 2 uses buildings in the eastern North Basin and Horse Barns to buffer the shoreline open space from freeway noise and air pollution.

Alternative 3

Alternative 3 uses buildings all along the eastern edge of the site to separate the shoreline open space from the freeway.

Alternative 4

Alternative 4 places buildings all along the freeway, except at the Brickyard.

CRITERION 8: OVERCOMING THE FREEWAY BARRIER

Alternative 1

Alternative 1, with its very extensive non-developed areas, does not create strong links to areas across the freeway. Neither is it likely to have particularly beneficial spinoff effects on adjacent uses; it makes the waterfront into a retreat thoroughly isolated from the rest of the city by the freeway. However, additional pedestrian and bicycle overcrossings could increase the accessibility of the waterfront to the West Berkeley neighborhoods.

Alternative 2

Alternative 2 does place development areas along the eastern edge of the site, thus creating the opportunity for use linkages and potential beneficial spinoff effects on adjacent areas, such as the Fourth Street commercial concentration. Gilman Street would become the focal point of this physical integration.

Alternative 3

Alternative 3 has the greatest potential for strong use linkages across the freeway, because the development along the eastern portion of the site is patterned after that east of the freeway - an integrated mix of housing and commercial uses, small parcelization, etc. The relationship between new development and the rest of the city is potentially very strong and beneficial to both.

Alternative 4

Alternative 4 envisions a very different type and scale of uses on the site than exists east of the freeway. The office/R&D along the North Basin would create a clientele for service, retail and restaurant uses, thus potentially having beneficial economic spinoff effects on those types of existing uses, although to some extent they are proposed to be part of the new uses on the site. In effect, this alternative creates a new office/commercial center that would be more closely tied to the regional economy than to the rest of

Berkeley. In addition, the traffic generated by this alternative would potentially increase the separation of the waterfront from the city, as every intersection would be congested for major portions of each work day.

CRITERION 9: CONSISTENCY WITH EXISTING PLANNING POLICIES

Relevant land use and urban design policy for the waterfront and surrounding city is contained in four documents: The 1977 Master Plan, the Goals and Policies for the Waterfront (Council version of February 13, 1985), the West Berkeley Redevelopment Area Plan, and the City's zoning regulations.

Applicable Master Plan policies include the following:

Relevant provisions of The Character of Berkeley (policies 1.00-1.04) include a desired population limit of 120,000 persons, and a requirement that traffic and parking impacts on residential areas be avoided.

Relevant Residential provisions (policies 1.10-1.16) include encouragement of residential development in major commercial areas, and the protection of residential streets from hazardous or heavy traffic.

Relevant Commercial policies (1.20-1.26) include designation of four district types of commercial area: 1) the Central District (Downtown Core), 2) Commercial Service Districts (auto-oriented), 3) Community Commercial District (intermediate-sized centers providing a wide variety of goods and services to residents), and 4) Neighborhood Commercial Districts (serving the day-to-day needs of adjacent residents. Commercial activities which serve a regional market are encouraged to locate in the Central District or a Commercial Service District.

The West Berkeley Redevelopment Plan is described in the Background Analyses, Land Use and Policy Context section, as are City zoning provisions, except that the height limit for the areas zoned "industrial" just east of the waterfront has now been reduced from 100 feet to 45 feet.

Alternative 1

Alternative 1 is consistent with the above policies; it would require designation of the Marina Edge parcel as a Commercial Service District.

Alternative 2

Alternative 2 is also consistent with the above policies, it would require designation of the development parcels along the freeway as Commercial Service Districts.

Alternative 3

Alternative 3 would probably require creation of a new "Mixed Use" designation for the development parcels in the eastern portion of the site. If the height limit in these areas was to be keyed to that in adjacent areas, it would need to be kept at 45-50 feet.

Alternative 4

Alternative 4 development parcels could be called Commercial Service Districts, except that their extent and intensity so far exceeds that of other similarly designated areas in the city. In fact, as described under Criterion 1 of this section, the amount of development in this alternative significantly exceeds that in all of Downtown Berkeley.

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BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Recreation and Open Space

Prepared by ROMA Design Group

B. RECREATION AND OPEN SPACE

Introduction

Existing facilities and needs for recreation and open space have been described in the Background Analyses of January 1985. This discussion will assess the generic land use alternatives according to how well each satisfies the following evaluation criteria:

1. Enhancement of public access to the Bay, provision of a continuous shoreline open space, creation of a variety of water's edge experiences, and improvement of opportunities for linear recreation activities such as jogging, bicycling, sight-seeing, and walking.
2. Provision of a variety of recreational, educational, and cultural activities appropriate to this unique waterfront setting.
3. Satisfaction of local and regional recreational needs and preferences of different age and income groups and the disabled.
4. Linking with and complementing existing recreational activities at the Berkeley waterfront (North Waterfront Park, Marina, and Aquatic Park).

Each of the alternatives provide major new additions to the recreation and open space resources of Berkeley and the region. Each alternative, however, achieves to a different degree the four criteria established in the waterfront planning process. Table 13 provides a qualitative comparison of objectives.

TABLE V.B.1: SUMMARY: RECREATION AND OPEN SPACE CRITERIA COMPARISON

| <u>Criterion</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------|---------------|---------------|---------------|---------------|
| 1 | - | X | ++ | - |
| 2 | X | -- | ++ | - |
| 3 | X | X | X | X |
| 4 | X | - | ++ | - |

Key: ++ most fulfills criterion
+ more than fulfills criterion
X meets but does not exceed criterion
- does not fulfill criterion
-- least fulfills criterion
+- fulfills one part or measure of a criterion
but fails to meet another aspect

Basic Elements

The Basic Elements common to all alternatives are in large part a direct response to environmental concerns, which are addressed under the Conservation evaluation criteria. Outfall improvements, shoreline repair, and additional fill and grading are necessary mitigations to soil and water quality conditions. The provision of a minimum 100-foot shoreline open space corridor achieves not only regional public access objectives, but also avoids the potential hazards of shoreline instability and adverse effects on marine habitat if development were located too near the water. The Basic Elements ensure that at least the minimal level of environmental and user needs are met by all four alternatives. Beyond that fundamental level, the alternatives differ in the degree to which they emphasize open space, the amount and cost of improvements, the variety of recreational activities accommodated, etc. It will be these additional characteristics beyond the minimum "Basic Elements" that will differentiate among the alternatives.

The Basic Elements common to all alternatives are described in Chapter III and diagrammatically indicated in Figure III.B.1. These elements include:

| | |
|--------------------------|---------------|
| Open water areas: | 515 acres |
| Shoreline open space: | 70 acres |
| Mudflat/wetland habitat: | 5 to 10 acres |
| Beach areas: | 7 to 10 acres |

Open Water Areas

Each of the four development alternatives assume the dedication of the privately held submerged land areas to a public agency to assure public access and environmental protection. The privately held areas are located in the "north sailing basin" and the "south sailing basin" between the city limits. Potential recreation activities may be limited to non-body contact sports due to water quality constraints (see discussion of conservation criteria).

No specific modification to the submerged lands is essential to any of the alternatives. One option considered during the refinement of the alternatives for the North Basin was a dredged marina. However, none of the alternatives propose dredging. This does not preclude utilizing the North Basin for temporary or small boat (e.g., less than 20 feet) moorage.

Shoreline improvements to increase the diversity of activity are appropriate to all the alternatives. A range of specific improvements are shown on the illustrative site plans. No comparative assessment has been attempted of these optional improvements since they are not significant to the comparative evaluation of alternatives but could increase the variety of recreational activities in any of these.

Shoreline Open Space

Each of the alternatives include approximately 70 acres of land adjacent to the shoreline that would accommodate the needs of a regional trail system integrated with the proposed East Bay Regional Shoreline. In all alternatives, this basic element has a minimum width of 100 feet.

In Alternative 4, a portion of this basic element, along the northern perimeter of the meadow, is proposed to be subject to a public access easement. With this exception, all other portions of the shoreline, in each of the alternatives, are assumed to be dedicated to a public agency to assure public access.

Mudflat/Wetland Habitat

In all the alternatives, the existing mudflats of approximately 5 to 10 acres in the Brickyard cove are assumed to be in a protected nature preserve. The preserve could include boardwalks to increase public access depending on the approval of regional environmental agencies.

Beach Areas

In all the alternatives, the Berkeley Beach could be reestablished along the road frontage between the Brickyard Cove and the Ashby spit. Additionally, a beach could be included in the North Basin adjacent to the North Waterfront Park (see discussion of conservation criteria).

Summary of Open Space Provisions of the Alternatives

The most basic distinctions among alternatives include the amount of additional land devoted to open space beyond the basic elements and the quality or character of that open space and the activities accommodated by it. These distinctions are addressed by the evaluation criteria.

Table V.B.2 provides a summary of the amount of land devoted to open space in each alternative. These figures include the basic elements described above as well as additional open space components unique to each alternative. The total upland open space ranges from 81 acres in Alternative 4 to 156 acres in Alternative 1. When the submerged lands are included in the totals, the open space ranges from nearly 600 acres in Alternative 4 to over 670 acres in Alternative 1.

TABLE V.B.2: SUMMARY OPEN SPACE LAND AREA BY ALTERNATIVE (IN ACRES)

| | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|----------------------------|---------------|---------------|---------------|---------------|
| Total Upland Open Space | 156 | 124 | 97 | 81/a/ |
| Percent of Upland Area | 92% | 73% | 57% | 47% |
| Total Submerged Lands | 515 | 515 | 515 | 515 |
| Percent of Submerged Lands | 100% | 100% | 100% | 100% |
| TOTAL OPEN SPACE | 671 | 639 | 612 | 596 |

/a/ Approximately 38 acres of the open space in this alternative are subject to a public access easement across privately held lands. This includes the following proposed easements:

| | |
|------------------------|------------------|
| Berkeley Crescent Area | 24 acres |
| Brickyard Area | +10 acres |
| North Basin Promenade | + 4 acres |
| | <u>+38 acres</u> |

CRITERION 1: ENHANCEMENT OF ACCESS/CONTINUOUS SHORELINE OPEN SPACE

Alternative 1

Alternative 1 falls short of satisfying this criterion, because it allows no vehicular access from north to south, i.e., between the three access points at Gilman, University, and Ashby. Thus, it precludes access by the segment of the population that would prefer such activities as sight-seeing by car and tailgate fishing.

Alternative 2

Alternative 2 has a north-south vehicular connection only from Gilman to University, thus causing to some degree the same reduction of access as described above.

Alternative 3

Alternative 3 has a continuous scenic drive from one end of the site to the other. Thus, the shoreline open space is not only open to the maximum range of types of access, but also is clearly not "privatized" by development fronting immediately upon it. The public roadway clearly divides development parcels from the shoreline park and ensures that it is highly visible and perceived as belonging to the public rather than to adjacent buildings.

Alternative 4

Alternative 4 could potentially limit public access to the south shoreline of the North Basin, since that area is designated a privately-held access easement rather than public open space. The continuity of the regional shoreline is interrupted by the developed portion of the North Meadow. Public access including the bicycle and pedestrian path will share a roadway right-of-way between development parcels.

CRITERION 2: VARIETY OF ACTIVITIES

The range of activities possible in public open space is a very wide one, from a low-maintenance, naturalistic urban wilderness, to a multi-use passive open space, to an ornamental or visual/scenic emphasis, to structured recreation, to educational, cultural, and civic activities or facilities. Existing recreational activities on the site are mainly related to the shoreline and the water, but also include some commercial recreation at the Marina, and the first phase of a 90-acre "urban wilderness" to be created on the North Waterfront Park.

Various user groups have different preferences regarding proposed recreational activities on the site. Water sports enthusiasts emphasize the importance of new piers, a boathouse, and sailboat/windsurf rental and launch areas. Environmentalists place high priority on improvement of Brickyard Cove and Strawberry Creek to enhance wildlife habitat. One contingent strongly favors a non-irrigated, naturalistic succession of native or naturalized grassland and scrub; another group advocates abundant vegetation and incorporation of an outdoor amphitheater, meeting rooms, and other educational/cultural facilities. In reality, all of these activities and landscape types can be accommodated on the site, subject to achieving a balance between costs and funding sources. Table V.B.3 characterizes the open space concept for each alternative, according to categories of open space that include the range of recreational, educational, and cultural activities for which community interest has been expressed.

TABLE V.B.3: LAND ALLOCATION BY RECREATIONAL TYPE FOR EACH ALTERNATIVE
(ACRES)

| | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------------------|---------------|---------------|---------------|---------------|
| "Urban Wilderness" | 77 | 77 | 19 | 19 |
| Multi-use passive | 29 | 5 | 15 | -- |
| Nature preserve | 24 | 24 | 14 | 24 |
| Structured recreation | 16 | 10 | 15 | -- |
| Boardwalk/activity center | 2 | -- | 5 | 5 |
| Civic/cultural concentration | -- | -- | 15 | -- |
| Ornamental/visual park | -- | -- | 5 | 24 |
| Beach sub-options | <u>8</u> | <u>8</u> | <u>8</u> | <u>8</u> |
| | 156 | 124 | 96 | 80 |
| | Acres | Acres | Acres | Acres |

The greatest diversity of types of activity is provided by Alternative 3, and the least by Alternative 2, which heavily emphasizes more of the same type of open space as is already being created on the North Waterfront Park.

CRITERION 3: SATISFACTION OF IDENTIFIED NEEDS AND PREFERENCES

Berkeley's Recreational and Open Space Need

As described in the Background Analyses, the City's current parks inventory (154 acres not including the 67-acre Aquatic Park lagoon or the completion of North Waterfront Park) falls short of the 1977 Master Plan goal of 2 acres per 1,000 residents. Using the current population of 103,328, the City standard would require about 207 acres. Using the ultimate population envisioned in the 1977 Master Plan, the standard would require 240 acres.

With the completion of the North Waterfront Park and if the Aquatic Park lagoon is included in the measure, the ratio of parkland to 1,000 persons would be 2.95 acres for the existing population and 2.54 acres for the ultimate planned population. See Table V.B.4.

TABLE V.B.4: RATIO OF PARKLAND PER 1,000 POPULATION IN THE CITY OF BERKELEY

| | <u>Acres</u> | <u>1980 Population (103,328)</u> | <u>Master Plan Population (120,000)</u> |
|--------------------------------------|--------------|--------------------------------------|---|
| Existing City Parks/a/ | 154.2 | 1.49 | 1.285 |
| Existing School Yards/b/ | 3.2 | | |
| Existing Aquatic Park Lagoon/c/ | <u>66.6</u> | | |
| Existing Subtotal | 224.0 | 2.17 | 1.87 |
| N. Waterfront Park/d/ | <u>81.0</u> | | |
| | 305.0 | 2.95 | 2.54 |
| Alternative #1 (Upland area only) | <u>156.0</u> | 4.46 | 3.84 |
| Alternative #2 (Upland area only) | <u>124.0</u> | 4.15 | 3.58 |
| Alternative #3 (Upland area only) | <u>97.0</u> | 3.89 | 3.35 |
| Alternative #4 (Upland area only) | <u>81.0</u> | 3.74 | 3.22 |

/a/ 140.33 acres were identified in the UPARR Recovery Action Program in the City of Berkeley, December 19, 1980, and listed in Table 4 of the "Recreation/Open Space Analysis" in the Summary of Opportunities and Constraints, ROMA, January 28, 1985. Additional public park resources were identified by reviewers that include:

| | |
|---------------------------------|------------------|
| Strawberry Creek Park | 3.37 acres |
| Bateman/Alta Bates Park | 0.5 acres |
| City-wide walks and steps | 6.0 acres |
| Misc. open space in Marina area | <u>4.0</u> acres |
| Total | 13.87 acres |

/b/ This figure includes recreation areas supported by joint City and School District efforts that have "unrestricted" use during school hours. Most of these areas have been developed using "Measure Y" funds. They include:

| | |
|--------------------|------------------|
| King Jr. High Park | 1.0 acres |
| Thousand Oaks Park | 1.2 acres |
| John Muir Park | <u>1.0</u> acres |
| Total | 3.2 acres |

/c/ This component of the existing park resources is shown separately in order to distinguish between land resources and water resources.

/d/ This component assumes the completion of the North Waterfront Park.

Open space standards for other Bay Area cities range from two to six acres per thousand residents, implying that Berkeley's standard may be minimal. The Berkeley zoning ordinance includes open space requirements for new development. The requirements range from 400 square feet per dwelling unit in R-2 districts to 100 square feet per unit in the least restrictive R-5 zone. For 1,000 units, this would translate into a requirement for 2-10 acres of usable open space to serve the approximately 2,000 new residents, i.e., from 1-5 acres per 1,000 population.

There is currently no analogous open space requirement for commercial development, nor is there an in-lieu fee mechanism such as exists in many cities. For example, Santa Monica, an urban city of similar size to Berkeley, is in the process of enacting open space dedication requirements for non-residential development (approximately 1-2 acres required for each 1,000 new employees). Santa Monica also has a \$200 Recreational Dwelling Unit Tax for each new unit built, in order to fund new park construction.

Specific local needs and preferences for particular activities, identified by the Parks and Recreation Commission, highlight a major deficiency in structured play fields. The Commission recommended that four be provided on the site (see Opportunities and Constraints Analysis). In addition, the Commission has requested that an outdoor amphitheater and civic gathering space be included, to relieve overuse of John Hinkel Park and the Greek Theater. All four alternatives could accommodate both of these identified local priorities.

Regional Recreation and Open Space Need

The state, in a 1979 report entitled "Recreation Outlook in Planning District 4", analyzes the inventory and use of existing parks, identifies important recreational issues and problems, and recommends solutions to the identified problems. A computer-based data system known as the Parks and Recreation Information System - PARIS - is the primary information source. PARIS provides information in three categories:

The demand allocation subsystem, which estimates potential demand for outdoor activities and allocates demand to geographic units (in this case, counties). Demand considers the following factors: the number of people, their recreational participation, where they live, willingness and ability to travel, and the usability of resources for recreational activity. Potential demand is measured in participation days.

The supply subsystem, which consists of an inventory of public and private recreation areas and facilities in California.

The deficiency analysis evaluation, which compares supply with potential demand to project deficiencies.

The most popular outdoor recreational activities are walking for pleasure (including jogging) and playing sports and games. Next in popularity are driving for pleasure, bicycling, and swimming. Trends indicate that these will continue to be the most favored recreational activities through the 1980's and 1990's. The PARIS analyses only focus on the activities of primary concern to the State Department of Parks and Recreation. They identify

four areas of recreational deficiency: camping units, boat access sites, bicycling and hiking trails, and picnic tables. These findings are documented in Tables V.B.5 and V.B.6. Table V.B.5 shows the percentage increase in demand for selected activities to the year 2000. Table V.B.6 shows the projected deficiencies in specific facilities.

TABLE V.B.5: DEMAND FOR SELECTED RECREATIONAL ACTIVITIES IN PARTICIPATION DAYS IN ALAMEDA COUNTY (LOCAL RESIDENT DEMAND ONLY)

| <u>Activity</u> | <u>1980</u> | <u>2000</u> | <u>Increase</u> | <u>Percent Increase</u> |
|-----------------------|-------------|-------------|-----------------|-------------------------|
| Bicycling | 7,392,000 | 7,930,000 | 538,000 | 7.28 |
| Hiking | 3,858,000 | 4,555,000 | 697,000 | 18.07 |
| Camping | 3,514,000 | 3,913,000 | 339,000 | 11.35 |
| Sailing | 485,000 | 636,000 | 151,000 | 31.13 |
| Power Boating | 606,000 | 698,000 | 92,000 | 15.18 |
| Misc. Swim & Beach | 691,000 | 888,000 | 197,000 | 28.51 |
| Nature Appreciation | 4,592,000 | 5,226,000 | 634,000 | 13.81 |
| Visiting Scenic Areas | 3,780,000 | 4,058,000 | 278,000 | 7.35 |

SOURCE: State Department of Parks and Recreation, East Bay Shoreline Feasibility Study.

TABLE V.B.6: CURRENT AND PROJECTED DEFICIENCIES OF SELECTED RECREATION FACILITIES PROVIDED BY PUBLIC AGENCIES IN ALAMEDA COUNTY (LOCAL RESIDENT DEMAND ONLY)

| | <u>1980</u> | <u>Percent Deficiency</u> | <u>1990</u> | <u>Percent Deficiency</u> | <u>2000</u> | <u>Percent Deficiency</u> |
|------------------------|-------------|---------------------------|-------------|---------------------------|-------------|---------------------------|
| Campsites (#) | 70 | 15 | 100 | 19 | 120 | 23 |
| Boat Access Sites (#) | 130 | 28 | 180 | 36 | 230 | 42 |
| Bicycle Trails (miles) | 390 | 82 | 380 | 82 | 430 | 84 |
| Hiking Trails (miles) | 400 | 94 | 440 | 95 | 470 | 95 |

SOURCE: State Department of Parks and Recreation, East Bay Shoreline Feasibility Study.

Regional needs can be distinguished from local needs mainly with regard to such uses as a regional trail, campgrounds, picnic areas, boat launch, and mooring or marina facilities. The trail, picnic areas, and buoyed small-boat mooring are included in the Basic Elements common to all alternatives. Campgrounds can easily be accommodated within the North Waterfront Park, as suggested by the State Parks Department. As for boat launch and permanent marina facilities, they should be evaluated for engineering and cost feasibility before being recommended as part of the plan for the waterfront. As with the beach options, they are "independent variables" that can be included in any alternative if deemed feasible and appropriate.

In conclusion, existing data and policy requirements are not sufficient to conclude that any of the alternatives fail to satisfy this criterion. The Basic Elements are designed to fulfill all identified local and regional needs and standards for both the existing population and for projected need.

CRITERION 4: LINKING WITH AND COMPLEMENTING EXISTING ACTIVITIES

Alternative 1

Alternative 1 includes commercial recreation and a major multi-use open space that would help reinforce and enhance the existing Marina activities. However, it does not respond particularly well to other adjacent land uses. A great portion of its open space is along the freeway, thus substantially defeating the intention of creating a retreat from city noise and fumes.

Alternative 2

Alternative 2 precludes the opportunity to create a real activity center around the Marina. It isolates the Marina between two very large expanses of wilderness-type open space - 90 acres at North Waterfront Park and 70 acres in the Meadow. This concept for the Meadow misses out on the opportunity to give the Meadow a strong sense of place and to make it the central gathering space tying together the disparate elements on the Waterfront.

Alternative 3

Alternative 3, because of its creation of a series of special "places" with strong open space links between, is the best complement to existing activities. North Waterfront Park fills a unique role as the most isolated, naturalistic environment. The Marina is strengthened by the addition of commercial/recreational and hotel uses. Lastly, the civic/cultural complex at the heart of the Meadow provides the type of gathering place that currently does not exist in the city, and opens up the waterfront to more frequent and intensive use by a much wider range of age and income groups than would the other meadow options.

Alternative 4

Alternative 4, because of the ambiguous designation of the eastern Brickyard and most of the Meadow as privately-held access easement, may or may not fulfill the criterion of strong linkage of existing activities. There is no guarantee that these areas would always remain open space, and even if they did, they could be developed in such a way as to seem like the "front yards" for development. Finally, the connection to North Waterfront Park is not a strong one, because of the development parcel along the North Basin.

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BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Physical and Biological Characteristics

Prepared by ESA

C. PHYSICAL AND BIOLOGICAL CHARACTERISTICS

GEOLOGY, SOILS, AND LANDFILL CLOSURE

Introduction

Geology, soils, and landfill closure aspects of the development alternatives are evaluated in relation to the following criteria:

C2. Meeting or exceeding environmental standards

C3. Minimizing environmental hazards

Table V.C.1 summarizes qualitatively how each alternative compares against the criteria for geology, soils, and landfill closure.

TABLE V.C.1: SUMMARY OF GEOLOGY, SOILS, AND LANDFILL CLOSURE

| <u>Criterion</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------|---|---------------|---------------|---------------|
| C2 | | | | |
| C3 | | | | |
| Key: | | | | |
| | ++ most fulfills criterion | | | |
| | + more than fulfills criterion | | | |
| | X meets but does not exceed criterion | | | |
| | - does not fulfill criterion | | | |
| | -- least fulfills criterion | | | |
| | +- fulfills one part or measure of a criterion but fails to meet another aspect | | | |

SOURCE: ESA

Criterion C.2

HOW DO THE ALTERNATIVES COMPARE IN MEETING OR EXCEEDING ENVIRONMENTAL STANDARDS, SUCH AS AIR AND WATER QUALITY AND NOISE PROTECTION?

Landfill Closure

The Meadow and North Basin Strip are classified as Class II landfills by the Regional Water Quality Control Board (RWQCB), and therefore must be closed in compliance with State standards./1/ Landfill closure is undertaken to prevent health hazards and to allow development of the landfill area. Elements of landfill closure are:

- 1) Creation of impervious landfill cover to reduce infiltration and leachate generation;
- 2) Grading of ground surface to promote drainage;
- 3) Sealing of landfill perimeter to prevent leachate seepage;
- 4) Control of methane gas; and
- 5) Compensating for anticipated settlement.

Cover and Drainage. The precise details of landfill closure will be spelled out in a Landfill Closure Plan, agreed to by the RWQCB. Several criteria and standards are of particular importance. A minimum three-foot cap will be required, consisting typically of a one- to two-foot clean soil base; a one-foot layer of probably imported clay soil compacted to a permeability of 10^{-6} centimeters/second; and a one-foot soil cover which may or may not be overlain by topsoil. With the exception of the clay soil, on-site soils are probably adequate for the required cover. Open space and landscaping over the landfill will require one to five feet of topsoil to restrict roots from penetrating the compacted clay seal and prevent the clay layer from drying and cracking. Open space and landscaped areas also will require a gradient of about 3% to promote drainage, and/or other measures (e.g., sand beds, perforated pipe and drains) to assure that surface water does not percolate into the underlying landfill. Areas to be developed for streets, parking, walkways, buildings, and other structural installations which provide impervious cover will not require a compacted clay layer, but a minimum of three feet of clean soil.

These steps will have to be undertaken before development of the site under Alternatives 1 through 4 can occur. Alternatives with increasing amounts of open space and landscaped areas will require correspondingly increasing attention to surface compaction and drainage and initially higher site preparation costs in order to meet the permeability standards set forth by RWQCB.

Seepage. Seepage of leachate from the perimeter of the landfill was found at two locations./2/ Seepage of leachate into the Bay could adversely affect the quality of Bay water. Sealing of the landfill perimeter to prevent seepage is one requirement of landfill closure./1/ Alternatives 1 through 4 would all require landfill closure before development, including sealing of the landfill perimeter by construction of an impermeable barrier, such as a clay plug, at areas of known seepage./1/ If the perimeter of the landfill is sealed during landfill closure, all alternatives would be about equal in mitigating the seepage hazard.

Methane. Methane is generated by the decomposition of organic matter, and could result at the site from decomposition of refuse fill or peat. A study of the project site found methane at detectable levels at the North Basin Strip; none was discovered at the Meadow or Brickyard./2/ Methane produced at the site would be hazardous only if concentrated to a 5% mixture with air./2/ The impervious asphalt covering of the North Basin Strip was probably responsible for buildup of methane in this area. Development of impervious surface covers at the Meadow could also trap methane.

Monitoring of methane levels in the Meadow area and installation of an active or passive venting system (depending on the amount of methane production) in the North Basin Strip would prevent concentration of the methane to explosive levels. Thus, with mitigation, all alternatives would be equally responsive to this hazard.

Settlement. See Criterion C.3, below.

Criterion C.3

HOW DO THE ALTERNATIVES COMPARE IN MINIMIZING HAZARDS SUCH AS FLOODING, SETTLEMENT, AND SHORELINE INSTABILITY?

Settlement

Settlement at the project site has occurred in the past and is expected to continue in the future. Two processes responsible for settlement are decomposition of refuse fill, and compression of Bay mud./1/ Decomposition of refuse fill leads to a decrease in volume and is most significant in areas underlain by organic-rich fill. The Meadow has been filled with organic-rich refuse and is therefore the most susceptible to settlement resulting from fill decomposition. The North Basin Strip was filled with material that was partially incinerated before emplacement, and is less susceptible than the Meadow to settlement from decomposition. The Brickyard was filled with construction rubble, and settlement from decomposition of fill is considered unlikely.

Compression of Bay mud results from the overlying weight of refuse fill, soil, and structures. The amount of compression depends upon the weight of the overlying materials, the thickness of the Bay mud layer, and the length of time since fill was emplaced./1/ Future settlement from emplacement of existing fill is estimated at up to one foot at the Meadow, a few inches at the North Basin Strip, and none at the Brickyard. Additional settlement would result from emplacement of one foot of new fill and is estimated at two to four inches at the Meadow, one to two inches at the North Basin Strip, and none at the Brickyard.

Differential settlement is a lateral variation in the amount of settlement that occurs. This hazard can result in damage to buildings, pavement, and utility lines, and is significant at the Meadow only./3/

In general, hazards to structures from settlement can be reduced by surcharging and/or foundation design. Surcharging is the temporary placement of fill upon an area to accelerate the rate of compaction and settlement. This fill is removed before building construction. Surcharging would be expected to reduce the amount of settlement from compaction of Bay mud after project construction. However, it would have little effect on settlement resulting from decomposition of refuse. Surcharging may not be feasible at the North Basin Strip or Horse Barn areas because these areas are being actively used.

Foundation design can reduce the hazards of structural damage by spreading the loading of geologic materials by buildings over greater areas, by transferrring this loading to less compressible materials underlying the refuse fill and Bay mud (pile supports), and by strengthening structural resistance to damage. If these mitigation measures are applied at the site, the risk of settlement hazards would decrease for all alternatives in the East, North, and Central Meadow; the North Basin; the Horse Barns; and the Marina Edge. However, the relative degree of hazard risk to the alternatives, summarized below, would be unchanged. Generally, alternatives which propose larger amounts of development and taller buildings would be subject to greater risks in those areas likely to undergo significant settlement.

East Brickyard. This area was filled with construction rubble having a low organic content, and is underlain by less than five feet of Bay mud. Therefore, settlement from past or future emplacement of fill is considered insignificant. Hazards to structures proposed as part of Alternative 3 would be insignificant. As the other alternatives do not propose structures at the Brickyard, no hazards would exist.

East Meadow. This area was filled with refuse with substantial organic content. Underlying Bay mud varies from less than five feet to up to ten feet. Therefore, settlement is a moderate hazard at this location (being more significant than at the Brickyard but less than at areas underlain by greater thicknesses of Bay mud). Alternatives 1 and 2 propose a freeway buffer and possibly playing fields at this location. Settlement could result in poor drainage of playing fields but otherwise would not be a significant hazard. Alternative 3 proposes 532,000 sq. ft. of housing and office development with building heights up to 65 feet high. Thus, unless properly engineered, Alternative 3 would be subject to settlement hazards. Alternative 4 proposes 850,000 sq. ft. of hotel and office development with building heights up to 100 feet, so would be subject to the greatest potential settlement hazard. Alternatives with buildings over two stories would probably use pile supported foundation design to reduce settlement hazards.

Central and North Meadow. This area is underlain by refuse with high organic content and up to 30 feet of Bay mud. Future settlement from past loading of fill onto the Bay mud and decomposition would be expected to be up to one foot./1/ Alternatives 1 and 2 would leave this area as open space. Settlement would be an insignificant problem although it could result in poor drainage and damage to walkways. Alternative 3 proposes a conference and exhibit facility at this location. These would probably be low buildings, but would be subject to potential structural damage from settlement. Alternative 4 would construct 955,000 sq. ft. of hotel and office space with buildings up to 75 feet in height. These structures would require elaborate foundation design to minimize settlement hazards.

Marina Edge. This area is underlain by organic-rich refuse and 10 to 30 feet of Bay mud. Alternative 1 would include 100,000 to 200,000 sq. ft. of development with two-story buildings. These structures would be subject to potential structural damage. Alternative 2 would keep this area as open space. Therefore settlement hazards would be insignificant. Alternative 3 proposes 200,000 sq. ft. of development with three-story buildings, which would be subject to roughly similar levels of settlement hazard as Alternative 1. Alternative 4 proposes 150,000 sq. ft. of development with up to 75-foot high buildings. The settlement hazard would increase because of the heights of proposed buildings, requiring elaborate foundation design.

North Basin Strip. This area is underlain by partially incinerated fill and up to ten feet of Bay mud. Future settlement from past filling is expected to be up to a few inches. Additional filling would be needed in some locations for landfill closure because of the relatively thin cover of soil present (two to seven feet). Alternative 1 would leave this area as open space, resulting in insignificant settlement hazards. Alternative 2 would develop up to 500,000 sq. ft. of hotel space with maximum height of two stories, and Alternative 3 would develop 705,000 sq. ft. of housing, and offices in this area. The increasing amount of development and height of buildings would increase the settlement hazards to these alternative. Alternative 4, with 1,215,000 sq. ft. of development and building heights up to 75 feet, poses the greatest potential settlement hazard and would require the most elaborate foundation design.

Horse Barns. This area is underlain by partially incinerated refuse and up to 20 feet of Bay mud. Because of the thickness of Bay mud in this area, settlement hazards would be greater than at the North Basin Strip but probably less than at the Meadow. Alternative 1 would be subject to insignificant

settlement hazards. Alternatives 2, 3, and 4 would be subject to significant settlement hazards, increasing with the greater amount of development and taller buildings.

Seismic Hazards

The project site is subject to seismic hazards from an earthquake on the Hayward or San Andreas fault. A significant earthquake on either fault would produce strong groundshaking at the site./1/ In general, the severity of groundshaking at the site would not be expected to vary greatly over the site because the geologic strata underlying the site are fairly uniform, and surface fills probably exhibit similar seismic response properties despite their compositional differences. Therefore, each alternative is analyzed as whole and not broken into geographic subsections.

Hazards from seismic groundshaking can be reduced by proper design and construction of buildings and secure attachment of shelves, lighting fixtures, and hangings to walls and ceilings. Project structures should conform with seismic response standards of the latest version of the Uniform Building Code. These measures would decrease the hazards to all alternatives from seismic groundshaking to low levels; however, the relative degree of hazard to each alternative would be unchanged. Generally, the risk increases with levels of development and occupancy, as summarized below.

Alternative 1 would develop 100,000 to 200,000 sq. ft. of space subject to hazards from structural damage and human injury. Alternative 2 would include 500,000 sq. ft. of development. This alternative would include a 300- to 400-room hotel, which would increase injury hazards from an earthquake during night hours. Alternative 3, with 2,300,000 sq. ft. of development, including 950 housing units and 550 to 650 hotel rooms, would increase the hazard of structural damage from groundshaking, and the housing and hotel would increase the risk of human injury, especially during night hours. Alternative 4 proposes 4,150,000 sq. ft., which would increase the hazards of structural damage as compared to the other alternatives. Although this alternative would include hotel development (size unknown), no housing is proposed. Therefore, the potential for injury during non-business hours probably is reduced, compared to Alternative 3.

Slope Stability

The perimeter slopes of the site could be subject to ground lurching during seismic activity./3/ Deformation of these slopes would probably consist of movement towards the Bay and cracking of ground behind the slope crest. Structures situated near these slopes could suffer damage during slope failure. Because the precise locations of proposed project structures have not been determined, the severity of this hazard for each of the alternatives cannot be determined.

This hazard could be eliminated by the establishment of a 100-foot setback zone from all perimeter slopes, within which no structures would be built. If this mitigation were incorporated into all alternatives, slope instability hazards would be minor for all. However, some options under all alternatives for development of the Shoreline Park, North Basin, and Nature Preserve would include shops, piers, a marina, and an interpretive center, which would be subject to slope instability hazards. Mitigation of this hazard would involve extensive reconstruction of the slopes.

NOTES - Geology, Soils and Landfill Closure

/1/ Harding Lawson Associates, Preliminary Landfill Closure Plan, Santa Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, August 16, 1984.

/2/ Harding Lawson Associates, Preliminary Landfill Assessment, Santa Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, August 10, 1984.

/3/ Harding Lawson Associates, Revised Report, Preliminary Geotechnical Study, Santa Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, August 10, 1984.

GEOLOGY, SOILS, AND LANDFILL CLOSURE

| Subarea | Alternative | Criterion C.2 Landfill Closure | Criterion C.3 | | | | |
|----------------------|----------------------------|-----------------------------------|---------------|-------------------------|-----------------|---------|-------------------|
| | | | Settlement | Differential Settlement | Seismic Hazards | Methane | Slope Instability |
| Shoreline Park | 1-4 | X | -/X | -/X | X | X | -/X |
| North Basin Options: | 1-4 | | | | | | |
| | As is | X | + | + | + | ++ | X |
| | Small boats, public access | X | X/+ | X/+ | + | + | -/X |
| | Marina | X | -/X | -/X | X | X | --/- |
| South Basin Options: | 1-4 | | | | | | |
| | As is Beach | X | ++ | ++ | ++ | ++ | X |
| | | X | + | + | + | + | -/X |
| Nature Preserve | 1-4 | ++ | ++ | ++ | X | ++ | -/X |
| Berkeley Beach | 1-4 | ++ | ++ | ++ | + | ++ | -/X |
| East Brickyard | 1 | ++ | ++ | ++ | ++ | ++ | |
| | 2 | ++ | ++ | ++ | ++ | ++ | |
| | 3 | ++ | ++ | ++ | X | ++ | |
| | 4 | ++ | ++ | ++ | ++ | ++ | |
| East Meadow | 1 | X | ++ | ++ | ++ | ++ | |
| | 2 | X | ++ | ++ | ++ | ++ | |
| | 3 | X | -/X | X/+ | X | + | |
| | 4 | X | --/- | -/X | X | X | |

(Continued next page)

GEOLOGY, SOILS, AND LANDFILL CLOSURE (Continued)

| Subarea | Alternative | Criterion C.2 Landfill Closure | Criterion C.3 | | | |
|--------------------------|-------------|-----------------------------------|---------------|-------------------------|-----------------|---------|
| | | | Settlement | Differential Settlement | Seismic Hazards | Methane |
| North and Central Meadow | 1 | X | X/+ | X/+ | ++ | ++ |
| | 2 | X | X/+ | X/+ | ++ | ++ |
| | 3 | X | -/X | -/X | + | + |
| | 4 | X | --/- | --/- | X | X |
| Marina Edge | 1 | X | -/X | -/X | + | + |
| | 2 | X | X/+ | X/+ | ++ | ++ |
| | 3 | X | -/X | -/X | + | + |
| | 4 | X | --/- | -/X | X | X |
| North Basin Strip | 1 | X | ++ | ++ | ++ | ++ |
| | 2 | X | -/X | ++ | + | + |
| | 3 | X | -/X | ++ | X | X |
| | 4 | X | --/- | ++ | X | X |
| Horse Barns | 1 | X | ++ | ++ | ++ | ++ |
| | 2 | X | -/X | ++ | + | + |
| | 3 | X | -/X | ++ | X | X |
| | 4 | X | --/- | ++ | X | X |

Values are given for mitigated conditions, or for unmitigated/mitigated conditions where mitigation measures would be difficult or expensive.

HYDROLOGY, DRAINAGE, AND WATER QUALITY

Introduction

Hydrology, drainage, and water quality aspects of the development alternatives are evaluated in relation to the following criteria:

C2. Meeting or exceeding environmental standards

C3. Minimizing environmental hazards

Table V.C.2 summarizes qualitatively how each alternative compares against the criteria for hydrology, drainage, and water quality.

TABLE V.C.2: SUMMARY OF HYDROLOGY, DRAINAGE, AND WATER QUALITY

| <u>Criterion</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------|--|---------------|---------------|---------------|
| C2 | | | | |
| C3 | | | | |
| Key: | | | | |
| ++ | most fulfills criterion | | | |
| + | more than fulfills criterion | | | |
| X | meets but does not exceed criterion | | | |
| - | does not fulfill criterion | | | |
| -- | least fulfills criterion | | | |
| +- | fulfills one part or measure of a criterion but fails to meet another aspect | | | |

SOURCE: ESA

Criterion C.2

HOW DO THE ALTERNATIVES COMPARE IN MEETING OR EXCEEDING ENVIRONMENTAL STANDARDS, SUCH AS AIR AND WATER QUALITY AND NOISE PROTECTION?

Water Quality

Water-related environmental standards with which the project would be required to comply include leachate seepage control (see above, Landfill Closure) and preventing degradation of Bay water quality, especially if water contact recreation is encouraged at the site or vicinity. Major objectives of landfill closure (above) include the placement of an impervious cover over the landfill to prevent infiltration of surface runoff, thus minimizing production of leachate, and sealing of the landfill to inhibit leachate migration and seepage.

Escape of leachate from the landfill into the surrounding environment would be prevented by proper closure of the landfill. Alternatives 1 through 4 would all include closure of the landfill before development would occur; therefore all these alternatives would reduce the risk of leachate escape to insignificant levels.

Development proposed by Alternatives 1 through 4 would generate oil and grease from roadways, which would probably be washed into the Bay by runoff. Development would also increase the use of fertilizers and other landscaping chemicals. Washing of these chemicals into the Bay would increase nutrient levels and could result in elevated coliform levels. In addition, research and development activities at the site would use industrial chemicals which could escape. In general, the larger amount of these pollutants generated or attracted to the site by development, the greater the potential for pollution of Bay water.

To mitigate these impacts, oil and grease traps could be installed as part of the storm drainage system for the site. If these traps were installed at the site and maintained properly, all alternatives would be similar in their potential to either pollute the Bay or to mitigate the problem.

The amount of fertilizers and other chemicals needed for landscaping could be reduced by careful selection of landscaping vegetation. However, because of the relatively poor quality of the soil at the site, large amounts of soil amendments would probably be required. This mitigation measure would not change the relative amount of chemicals required by each alternative.

Construction of special areas for the storage and handling of industrial chemicals would reduce the potential for spillage. These special areas would be isolated by berms and would not be connected to the normal storm drainage system. This measure would reduce water quality hazards of Alternative 4.

Bay water quality is monitored by the Regional Water Quality Control Board. Standards for Bay water quality for water-contact recreation require coliform counts of less than 240 MPN/100 ml and no visible grease, oil, or sludge present./1/ (Water contact recreation includes wading, swimming, and wind-surfing.) Standards also exist for various synthetic compounds, toxins, and industrial chemicals./1/

Existing quality of the bay water in the site vicinity is poor. Previous testing has shown that coliform bacteria levels have exceeded State standards for water-contact recreation. Testing for other pollutants has been minimal.

Options under all alternatives for development of the Shoreline Park, North Basin, South Basin, and Berkeley Beach would have two potential effects: additional pollution of the Bay by oil and gas from motorized boats and by litter, and exposure of people to unacceptable water quality. The potential for mitigation of the latter is currently unknown; further investigation of the extent, nature, and sources of the existing pollution would be required, as well as an engineering feasibility analysis of potential mitigation measures. Potential methods of mitigation could include improvement of water quality in the Strawberry Creek, Virginia Street, and Gilman Street storm drains, or relocation of those outfalls to avoid impacts on water-contact recreation areas.

Alternative 1 would develop up to 200,000 sq. ft. of commercial recreation and community facilities. Vehicles drawn to the site by this development would deposit oil and grease. This alternative would also involve the use of landscaping chemicals. Alternative 2 would develop 500,000 sq. ft. of hotel, conference, and recreation space. This increased amount of development would also increase traffic at the site and the amount of landscaping. Generation of oil, grease, and landscaping chemicals would increase. Alternative 3 proposes 2,300,000 sq. ft. of residential, hotel, office, retail, and exhibit

space. Increased traffic but possibly less landscaping would generate oil, grease, and some landscaping chemicals. Alternative 4 proposes 4,150,000 sq. ft. of hotel, retail, office, conference, and R&D space. Increased traffic volumes would increase the amount of oil and grease in surface runoff. Landscaped areas of this alternative would decrease, compared to other alternatives, potentially decreasing the volume of landscaping chemicals used. The inclusion of research and development uses in this alternative raises the potential for escape of industrial chemicals, unless properly controlled.

Option 1 for the North Basin would not develop recreational improvements, and water quality impacts would be insignificant. Option 2 would develop public access and encourage small boating in this area. This would generate the pollutants mentioned above and increase the potential for water-contact activities in an area of poor water quality. Option 3 would develop a marina, which could generate relatively large amounts of pollutants.

The Berkeley Beach would encourage water-contact activities in an area of poor water quality. This could violate State standards for water-contact recreation and have adverse public health impacts. This situation could be aggravated by relocation of the Strawberry Creek outfall into the Brickyard Cove area, which would increase the proximity of this outfall to the proposed beach.

The South Basin, if left in its existing condition (option 1), would not attract additional human use of the area, thereby minimizing water quality impacts. Formation of a natural beach (option 2) could result in increased generation of pollutants and human contact with poor water quality. Relocation of the Strawberry Creek outfall as noted above could improve water quality in this area although the technical feasibility and the effectiveness of this relocation is currently unknown.

Criterion C.3

HOW DO THE ALTERNATIVES COMPARE IN MINIMIZING HAZARDS SUCH AS FLOODING, SUBSIDENCE, AND SHORELINE INSTABILITY?

Drainage

The existing site is poorly drained. In general, interior portions of the site are lower in elevation than the perimeter dikes. Runoff is directed towards the center of the site where it ponds. Standing water probably increases infiltration into the refuse fill and corresponding production of leachate. With project development, ponded water must be avoided.

Landfill closure requirements call for grading to about 3% to produce positive drainage at the site. Two options for achieving site drainage are the filling of low-lying areas, or the creation of sumps.^{/2/} Filling and grading would produce a gradient that would direct runoff from the site into the Bay. Creation of sumps would require the raising of levees; runoff would then be directed into the sumps, which would be drained off-site. In either case, a drainage network would be established to reduce the likelihood of ponding. Because all alternatives involve landfill closure, they would all mitigate this problem about equally. However, the large areas of open space and landscaping, under Alternatives 1 and 2, will require more attention to drainage because of their greater exposure to infiltration.

Possible relocation of the Creek outfalls at the project site, under all alternatives, could result in reduced capacity of those storm drainage facilities, thereby increasing the risk of flooding in upstream areas served by the drains. The magnitude of this increased flooding hazard would be greatest under option 2 for the South Basin, which proposes an extensive relocation of the Strawberry Creek outfall. An engineering feasibility analysis would be necessary for proposed outfall relocations.

Flooding

Flooding from storm runoff is a problem only at the northwest corner of the Brickyard, which is subject to the 100-year flood. Alternatives 1 and 2 propose a nature preserve for the East Brickyard, which would probably not be significantly affected by flooding hazards. Alternative 3 includes up to 400 hotel rooms at the East Brickyard. This development could be subject to flooding hazards. Alternative 4 proposes a public access easement, which probably would not be adversely affected by this flooding.

The 100-year tsunami has a runup of six and one-half to seven feet above mean sea level at the site./3/ Tidal flooding is similiar to tsunami flooding and the level which the flood waters would reach in each situation are very similar (6.4 feet for 100-year tides; 6.5 to 7.0 feet for 100-year tsunami). Tsunami or tidal flooding could be a hazard at the Meadow and North Basin Strip, which are partially below this elevation. Hazards from flooding include damage to automobiles, buildings, and utility lines, impassable roads, and deposition of debris.

Hazards of flooding from the 100-year tsunami or tidal flooding could be eliminated by raising the height of perimeter levees, filling to raise the grade of the low-lying areas of the Meadow and North Basin Strip, or a combination of the above. These measures would prevent flooding from reaching developed areas of the site. If one or both of these measures are implemented, all four alternatives would be subject to only insignificant hazards from flooding.

East Meadow. The East Meadow is below the runup elevation of the 100-year tsunami over much of its area. Alternatives 1 and 2 would possibly develop playing fields at this area, which would not be significantly affected by flooding.

Alternative 3 proposes housing, hotel, and office space. The presence of permanent residences would result in the greatest potential flooding hazards, including human injury and dislocation of residents, of the four alternatives. Alternative 4 proposes hotel, office, and retail space in this area, which also would be subject to damage from potential flooding hazards.

Central and North Meadow. This area is subject to flooding from the 100-year tsunami over about one-half of its area, mostly the eastern and southern portions. Alternatives 1 and 2 would continue this area as open space, with insignificant flooding hazards. Alternative 3 would develop exhibit and cultural facilities, subject to potential flooding hazards. Alternative 4 would develop hotel, office, and retail development, which would be subject to the greatest potential flooding hazards.

Marina Edge. Except for the northern tip, this area could be extensively flooded by the 100-year tsunami. Alternative 1 proposes up to 200,000 sq. ft. of development, which could be exposed to flooding hazards. Alternative 2

would continue this area as open space. Alternative 3 would develop hotel and retail space, which would be subject to similar potential flooding hazards as Alternative 1. Alternative 4 would develop 150,000 sq. ft. of retail and public conference center, decreasing the potential hazard from flooding.

North Basin Strip. Portions of the North Basin Strip near the Bay which would be subject to tsunami flooding from the 100-year event would not be developed. Therefore tsunami flooding would be an insignificant hazard under all development alternatives.

Horse Barns. The northeast corner, or about one-third of the land area proposed for development, would be subject to tsunami flooding. Alternative 1 would leave this area as open space. Alternative 2 would develop up to 500,000 sq. ft. of hotels and associated facilities, which would be subject to potential flooding hazards. Development under Alternative 3 (670,000 sq. ft.) and Alternative 4 (1,080,000 sq. ft.) would increase the potential flooding hazards. Furthermore, the inclusion of housing (310 units) in Alternative 3 (not proposed by Alternative 4) would increase the risks of human injury and dislocation of residents.

NOTES - Hydrology, Drainage, and Water Quality

/1/ Doris Sloan (ed.), The East Bay Shoreline, Selected Environmental Issues, 1982, and Fred Jarvis, CRWQCB, telephone conversation, February 4, 1985.

/2/ Brian Grunewald, Hall Goodhue Haisley Barker, telephone conversation, March 20, 1985.

/3/ Harding Lawson Associates, Revised Report Preliminary Geotechnical Study, Santa Fe Land Improvement Company, Berkeley Waterfront Project, Berkeley, California, August 10, 1984.

HYDROLOGY, DRAINAGE, AND WATER QUALITY

| Subarea | Alternative | Criterion C.2 | Criterion C.3 | | |
|-------------------------|----------------------------------|---------------|---------------|---------|----------|
| | | Water Quality | Drainage | Seepage | Flooding |
| Shoreline Park | 1-4 | X | X | X | X/+ |
| North Basin Options: | 1-4 | | | | |
| | As is | + | X | X | + / ++ |
| | Small boats, public access | X | X | X | X / + |
| | Marina | - | X | X | - / X |
| South Basin Options: | 1-4 | | | | |
| | As is | X | X | X | + |
| | Relocate creek, install beach | -- / ? | - / ? | X | + |
| Nature Preserve | 1-4 | + | X | ++ | X |
| Berkeley Beach | 1-4 | -- / ? | X | ++ | + |
| East Brickyard | 1 | + | X | X | ++ |
| | 2 | + | X | X | ++ |
| | 3 | X | X | X | - / + |
| | 4 | + | X | X | ++ |
| East Meadow | 1 | + | X | X | + / ++ |
| | 2 | + | X | X | + / ++ |
| | 3 | X | X | X | -- / X |
| | 4 | X | X | X | - / X |

(Continued next page)

HYDROLOGY, DRAINAGE, AND WATER QUALITY (Continued)

| Subarea | Alternative | Criterion C.2 | Criterion C.3 | | |
|--------------------------------|-------------|---------------|---------------|---------|----------|
| | | Water Quality | Drainage | Seepage | Flooding |
| North and Central Meadow | 1 | + | X | X | ++ |
| | 2 | + | X | X | ++ |
| | 3 | X | X | X | -/X |
| | 4 | X | X | X | --/X |
| <hr/> | | | | | |
| Marina Edge | 1 | X | X | X | -/X |
| | 2 | + | X | X | ++ |
| | 3 | X | X | X | -/X |
| | 4 | X | X | X | -/X |
| <hr/> | | | | | |
| North Basin Strip | 1 | + | X | X | ++ |
| | 2 | X | X | X | + |
| | 3 | X | X | X | + |
| | 4 | X | X | X | + |
| <hr/> | | | | | |
| Horse Barns | 1 | + | X | X | ++ |
| | 2 | X | X | X | -/X |
| | 3 | X | X | X | -/X |
| | 4 | X | X | X | --/X |

Values are given for mitigated conditions, or for unmitigated/mitigated conditions where mitigation measures would be difficult or expensive.

BIOLOGICAL RESOURCES AND REGULATORY CONTEXT

Introduction

Biological resources and regulatory aspects of the development alternatives are evaluated in relation to the following criteria:

- C1. Conserving natural resources, preserving environmentally sensitive areas, and restoring unique environmental features
- C2. Meeting or exceeding environmental standards
- C4. Enhancing the understanding of natural processes and marine education

Table V.C.3 summarizes qualitatively how each alternative compares against the criteria for biological resources and regulatory aspects.

TABLE V.C.3: SUMMARY OF BIOLOGICAL RESOURCES AND REGULATORY CONTEXT

| <u>Criterion</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------|---------------|---------------|---------------|---------------|
|------------------|---------------|---------------|---------------|---------------|

C1

C2

C4

| | | |
|------|----|--|
| Key: | ++ | most fulfills criterion |
| | + | more than fulfills criterion |
| | X | meets but does not exceed criterion |
| | - | does not fulfill criterion |
| | -- | least fulfills criterion |
| | +- | fulfills one part or measure of a criterion but fails to meet another aspect |

SOURCE: ESA

Criterion C.1

HOW DO THE ALTERNATIVES COMPARE IN CONSERVING NATURAL AND CULTURAL RESOURCES, PRESERVING ENVIRONMENTALLY SENSITIVE AREAS, SUCH AS THE MUDFLATS AND MARINE ENVIRONMENT, AND RESTORING UNIQUE ENVIRONMENTAL FEATURES, SUCH AS THE BERKELEY BEACH AND THE CREEKS?

Introduction

With the exception of the near-shore aquatic habitat that surrounds three sides of the Berkeley Waterfront, most areas of the site are man-made (e.g., the landfilled uplands and riprapped shoreline). Other natural areas have been degraded by their proximity to urban development (e.g., the water quality of creeks, and nearshore aquatic habitat). Nonetheless, a considerable variety of plants and animals have become established over the years in the

various on-site habitats, and the potential exists for continuing habitat development. These plant and animal populations differ in their importance to the local and/or regional natural ecology and in their sensitivity to human activity and development. In the evaluation and comparison of effects of development on existing and potential biological resources under each alternative scenario, several factors are considered "sub-criteria" to Criterion C.1, above:

1. Does the area now support vegetation and wildlife species?
2. Is the vegetation native, or introduced?
3. Are the wildlife species sensitive or "special status" (i.e., on state or federal lists) species, native, limited in number either locally or regionally, or locally abundant? From a biological resource perspective, sensitive wildlife species are given highest priority for protection, followed by the "urban-adapted" species (excluding pests, e.g., mice and rats, that should not be encouraged).
4. Could an area be enhanced to support native or appropriate vegetation and wildlife species already inhabiting the vicinity, or to attract other native Bay Area species, particularly those that are being displaced by development elsewhere?

It should be noted that impacts on wildlife arise from both the construction (temporary) and the occupied use (ongoing) of an area. Construction may eliminate wildlife in a given area; use of that development affects wildlife use in a broader vicinity. Generally, as human access and activity in an area increase, wildlife values decrease.

Upland Terrestrial. The man-made uplands (landfill areas) support a mix of weedy vegetation and barren and littered areas. These areas do not have high intrinsic wildlife value, but become increasingly important as wildlife habitat as some of the only undeveloped space left along the bay waterfront in many areas. Considered more as unattractive, vacant land than as wildlife habitat, these bare or weedy areas of the Berkeley Waterfront nonetheless provide habitat resources for the following types of wildlife species: sensitive, native (such as the special status species burrowing owl, short-eared owl, and white-tailed kite); native, less sensitive (such as American kestrel, red-winged blackbird, black-tail jackrabbit, western fence lizard); and urban-adapted (such as house sparrow, mourning dove, Anna's hummingbird, house mouse, and rat).

The sensitive species require the greatest amount of protection in order for their populations to survive in the developing Bay Area. For species such as the burrowing owl, whose numbers are limited in the East Bay, vacant bay fill areas provide the only remaining habitat. The most sensitive species would most likely be lost from the Berkeley waterfront under any of the development alternatives, as any increase in developed area and/or increase in human access would reduce their habitat or disturb their use of the site sufficiently.

The potential for enhancing and protecting wildlife use of the upland area depends on how the individual habitat requirements of the various species are met. At a minimum, habitat requirements include food, shelter, cover, size of habitat, and adequate insulation from human disturbance. Thus, the proposed treatment of portions of the site would support use by some wildlife species while precluding others.

In all of the alternatives, some area is proposed as open space, and different areas are designated for landscaping. Open space can be designed for wildlife habitat, but the designation may also represent public parks, playfields, gardens, etc., which have limited wildlife value. How the open space is laid out and how it is landscaped will determine wildlife use. Generally, larger parcels of open space habitat provide greater opportunities for wildlife use; fragmenting the open space among developed areas limits the possibility that any parcel can provide a sufficient "refugium" for wildlife. The configuration of open space on the site that is intended primarily as wildlife habitat will be an important planning consideration and must take into account habitat needs of the desired wildlife populations.

Landscaping can create and emphasize habitat values of an area, even for specific wildlife species, or it could emphasize the aesthetics of grounds around developed areas or public open space, contributing little to wildlife use. It is likely that all open space designated in any of the development alternatives would be landscaped to some degree, whether it be a "naturalistic" or "ornamental" approach. Under all of the alternatives, then, close to 100% of the site would be altered in some degree from existing conditions and existing wildlife use would change. Landscaping would cause the loss of some existing wildlife uses and, at the same time, could improve other wildlife values.

Shoreline. The shoreline along almost the entire project site waterfront is heavily riprapped with large concrete blocks and construction debris. This riprap, or a structural substitute, is considered necessary to stabilize and protect the shore edge. There are four small beaches along the shoreline, formed through a natural process of sediment deposition. These beaches are composed of sandy mud and are extensions of the adjacent intertidal mudflats, sharing much of the bird and invertebrate life found in the mudflat habitat discussed below.

The riprap and beach areas form the transition zone between upland and aquatic/intertidal habitats. There is no salt marsh vegetation or significant upper marsh or marsh transition community on-site. Although the riprap has relatively low habitat value compared to a natural rocky shoreline, which it most resembles, it is used by both terrestrial and marine life. As a structural device for stabilizing and protecting the shoreline under all of the alternatives, riprap has greater habitat value than other methods and materials such as sheet piling or a concrete sea wall. Furthermore, the habitat value of riprap can be enhanced by varying the boulder size and placement slope, and by incorporating vegetation as part of the structure. The riprap transition zone can also serve as a buffer between human activity on the uplands and wildlife use of the mudflats and nearshore waters. Proposed treatment of the shoreline is discussed further, below, under Shoreline Park, an element common to all development alternatives.

Creeks which enter the project site and empty to the bay along the shoreline have been transformed into storm drains. In the project area creeks are potential, but not existing, habitats. Creek restoration is discussed below.

Intertidal and Aquatic. The intertidal and submerged mudflats which extend along most of the Berkeley Waterfront site's perimeter are valuable wildlife areas, particularly for shellfish and water birds. The mudflats in Brickyard cove extending south and at the mouth of Strawberry Creek and the adjacent open waters of the South Basin support the greatest wildlife use within the project area. Here, often imperceptible but abundant algae replenish oxygen

and are a vital component of the food chain; shellfish and other invertebrates inhabit the muds attracting large numbers of waterfowl and shorebirds; fish, as well, are abundant in the open waters. The biological resources of this area could be adversely affected by filling, dredging or construction in the intertidal areas and/or by establishing conflicting land uses on adjacent areas or upstream activities that degrade the local bay water quality.

Shoreline Park, North and South Basins

A Shoreline Park, common to all alternatives, would include a bike and pedestrian trail and various shoreline recreation activities (boating, swimming, fishing, etc.) along the entire waterfront. The more intense the development and human activity along the waterfront, the greater the impacts on the adjacent shoreline and the lesser the feasibility of enhancing these habitats for greater wildlife use. Impacts would be both direct (people in the water, dogs along the shoreline) or indirect. Although the North Basin shoreline and aquatic areas do not now receive heavy wildlife use, what they do support would be disrupted by increasing human activity, particularly activities such as water recreation (swimming, boating, fishing). The mudflats and open waters of the South Basin do support heavy wildlife use and would be environmentally sensitive to shoreline usage. Uses restricted to the land (e.g., waterfront trail), could be compatible with ongoing wildlife use of the South Basin shoreline and nearshore waters.

Berkeley Beach

The opportunity to preserve and/or enhance the existing Berkeley Beach along the South Basin's east shoreline exists under all alternatives. The proposed Shoreline Park, which would be common to all alternatives, would provide an open space buffer for the beach and also improve public access. Improving access to the beach, and increasing human activity along the shoreline, however, would reduce the wildlife values of this beach and would disrupt wildlife use of the adjacent intertidal mudflats and nearshore waters. Most waterfowl use waters at some distance from the shore, but shorebird and waterfowl activity could be disrupted; greater access to the shellfish beds of the mudflats could also encourage harvesting of these resources. However, as evidenced along many shorelines, some level of wildlife use (bird and invertebrate) would be compatible with public recreation. Shellfish harvesting could be controlled by regulation.

Creek Restoration and Nature Preserve

Three principal "creeks" run down from the city and enter the project site. At present, they pass underground through the eastern project site in culverts, serving as storm drains and emptying to the bay. Restoration would entail realigning these creeks across the surface of the site and improving their water quality, which currently is very poor.

Considerations for on-site creek restoration, thus far, have focused on Strawberry Creek, which enters the project site and empties into the bay west of the Brickyard in the South Basin. A small sandy mud beach and intertidal mudflat form the mouth of the creek. The preliminary restoration concept is to reroute Strawberry Creek on the surface south through the Brickyard to empty into Brickyard Cove. The creek would traverse that portion of the Brickyard proposed as nature preserve in all alternatives. Riparian vegetation could be established along the creek and a valuable environmental feature would be restored on the site. However, whether this creek would

serve as effective wildlife habitat or rather as an open space amenity would depend in part on the level of use allowed in the nature preserve and by the adjacent land uses developed under the various alternatives. Engineering problems would also require resolution.

In Alternatives 1 and 2 the entire Brickyard area would be designated a Nature Preserve. If access were restricted, the creek and associated riparian vegetation would contribute to the wildlife habitat value of this area. Alternative 4 designates the East Brickyard as a public easement area; the form of public access is not defined. The easement would serve as an open space buffer for the nature preserve/creek area. If direct access to the creek and remaining Nature Preserve were restricted, certain wildlife species could likely tolerate nearby human activity. Alternative 3 proposes hotel development for the East Brickyard area. Restoration of the creek, in this case, would be more valuable as an open space amenity than as riparian wildlife habitat. Habitat value within the designated Nature Preserve would be decreased by the proximity of development and increase in human activity.

Counter to the potential benefits to wildlife from restoring Strawberry Creek, some potential adverse impacts on existing resources could result. Rerouting the creek to empty into Brickyard Cove would require alteration of the present shoreline and some dredging to create a positive drainage flow into the bay. Frequent maintenance dredging would be necessary to remove accumulated silt and debris. This would periodically disrupt wildlife use of the mudflats in Brickyard Cove and cause recurring disturbance to mudflat invertebrate communities. The rerouting could also induce changes in the present mudflat habitat by altering local currents/flows and sedimentation characteristics. The implications of these changes are unknown. Furthermore, the quality of this water in the creek would need to be improved and routinely monitored, lest it become an additional source of pollution to Brickyard Cove.

The feasibility of creek restoration will depend on: 1) engineering feasibility; 2) the feasibility of improving water quality in the creek; 3) whether, by rerouting Strawberry Creek, water quality could be improved in other portions of near-shore waters, such as the "Strawberry Beach"; and 4) landfill closure requirements.

East Brickyard

Alternatives 1 and 2. Proposed as additional nature preserve, the upland area could be enhanced for certain species. This would preserve and likely increase existing use by common terrestrial animals. More elaborate enhancement plans, such as re-introducing native plant assemblages or creating a detached "island" at the end of the spit, could be implemented to attract a greater diversity of wildlife use.

Designating this area a nature preserve would establish an important buffer between upland activity areas (playing fields, structures) and the environmentally sensitive intertidal mudflats/aquatic habitats of Brickyard Cove. This buffer would protect the existing biological resources and increase the potential for enhancing the cove habitat by precluding incompatible land uses from the shoreline and adjacent upland.

Alternative 3. This area would be developed with a hotel, introducing a high level of human activity. Existing weedy and barren habitat would be removed and with it certain wildlife species. Proposed landscaping of roughly half the site would partially mitigate for the loss of existing habitat and could

enhance the site for certain wildlife species. The level of activity proposed for this area would reduce the wildlife value of the remaining upland habitat in the Brickyard area, including the spit, and might disrupt existing wildlife use of the mudflats in Brickyard Cove. These mudflats have the highest wildlife use within the land portion of the project site, and also are sensitive to development. Establishing a hotel adjacent to the cove mudflats would increase access to the cove by people (both hotel guests and local residents and their pets). The potential for enhancing wildlife use of this cove would be reduced by human intrusion.

Alternative 4. This area is proposed as a public access easement: open space intended for public use. The value to wildlife of retaining this area as open space is primarily its ability to buffer the Brickyard Cove mudflat area and proposed upland Nature Preserve, a key wildlife area within the project site. A buffer of open space adjacent to the Brickyard Cove mudflats would lessen the impacts of nearby developed uses on wildlife and support the possibility of enhancing wildlife use. However, access to the mudflats would have to be controlled in order to minimize disturbance of wildlife.

The open space upland itself would support some animal life, but as previously discussed, significant existing or potential wildlife values for most of the upland and shoreline would be diminished by the high level of activity from proposed high density development, use of open space as public easement rather than as restricted nature preserve, and removal of existing habitat. Primarily urban-adapted species would use the upland areas after landscaping.

The East, Central, and North Meadows

Alternative 1. The East Meadow would serve partly as a freeway buffer. Trees and larger shrubs would likely be established to form a more effective visual barrier than the existing vegetation now provides. Playing fields considered for this area would displace existing vegetation and wildlife. Loss of existing wildlife use could be partially mitigated if land adjacent to the playing fields were maintained with sufficient vegetation enhanced as habitat (i.e. retain existing vegetation where possible, and expand vegetation to now-barren areas).

The Central and North Meadow is designated as multi-use open space, which would clear the area of existing dense vegetation. This area would be re-landscaped with open (i.e., grassy) areas maintained for public use. The loss of habitat could be compensated by retaining (or selectively replacing) vegetation where possible and expanding coverage to now-barren areas, as planned in the East Brickyard area.

Alternative 2. The East Meadow would be treated the same as in Alternative 1, described above. The 35-acre Central and North Meadow area is planned as a 'low maintenance, naturalistic park'. This designation indicates that native plants would be established in this area and that, with minimum 'manicuring' (mowing, pruning), vegetative assemblages would develop naturally. Some wildlife uses of the existing habitat would be maintained and increased. This park use would provide a buffer between developed uses and the East Brickyard/Brickyard Cove Nature Preserve, similar to the multi-use open space in Alternative 1, but would provide greater habitat value than the cleared multi-use space.

Alternative 3. The East Meadow would be completely developed with residential and office use. Existing habitat and associated wildlife would be removed and

future wildlife use precluded. Landscaping between structures would support common urban-adapted species. In addition, these land uses, which significantly increase human activity in the area, would disrupt wildlife use of adjacent land and reduce the habitat value of the proposed Meadow open space.

Proposed as a civic/cultural concourse area, the Central and North Meadow area would become open space surrounding development of central facilities. The development would fragment the open space, thus reducing its viability as wildlife habitat. Furthermore, the increase in human activity and access in and around the open space would disrupt wildlife use. Weedy vegetation would be removed by new facilities and pathways through the open space; surrounding open space areas would be landscaped. The composition of species using the site would change, tending to represent the more urban-adapted species rather than native wildlife species. With the level of development and activity proposed in this alternative, the wildlife value of the meadow would be minimal.

Alternative 4. The East Meadow would be developed with a hotel and retail uses. Existing wildlife values would be eliminated. Proposed landscaping would support primarily urban animal species.

In the Central and North Meadow area, proposed open space would have public park value but limited wildlife value. Landscaping would introduce new plant species and enhance the site for certain urban-adapted species. As with the East Brickyard, retaining this area as open space would add acreage to the buffer between Brickyard Cove and the dense development clustered on the northern half of the project site. Development of North Meadow would eliminate existing wildlife and preclude further wildlife use.

Marina Edge

Alternative 1. Development of this area would eliminate approximately seven acres of existing upland habitat. This loss, again, could be partially compensated by establishing suitable vegetation elsewhere on the project site. Developing only the Marina Edge would leave the project site one large contiguous open space.

Alternative 2. The Marina Edge would not be developed as in Alternative 1, leaving the entire existing Meadow to be incorporated into the proposed naturalistic park.

Alternative 3. This area would be fully developed with a hotel. Existing wildlife value would be lost. Minimal landscaping around structures would support urban-adapted species. The activity generated by this land use would also disrupt wildlife use of adjacent open space in the meadow.

Alternative 4. Complete development would eliminate existing wildlife and preclude further wildlife use.

North Basin Strip and Horse Barns

Alternative 1. These areas are designated to become open space areas in Phase II. Planting these now-barren or developed areas with a mix of vegetation would attract wildlife and could partially mitigate for loss of wildlife values elsewhere on the site, as well as increase the site's biological resources. Human access should be restricted to support wildlife use of this open space.

Alternative 2. These areas would be developed in Phase II with hotel and commercial recreation facilities. Development would not displace any significant existing biological resources. Approximately half the area would be landscaped open space. Planting in these now barren/paved areas would increase habitat value. The type of plants and vegetation layout selected for the area would determine the wildlife use. This development would increase human activity on the waterfront which would affect wildlife use elsewhere on the site.

Alternative 3. In Phase II, this northern, barren strip would be developed with residential and office uses. Most existing biological values are relatively low, though certain bird species (e.g., terns) prefer open, barren lands. A green belt of open space would run between development and the shoreline. Landscaping would enhance this area for some existing animals, and attract other species. Generally, urban-adapted species would remain while sensitive species would be eliminated. Again, the limited size of the open space and the level of activity (i.e., disruption) in and around the open space would preclude significant wildlife use.

Alternative 4. These areas would be heavily developed. Existing wildlife values would be eliminated.

Criterion C.2

HOW DO THE ALTERNATIVES COMPARE IN MEETING OR EXCEEDING ENVIRONMENTAL STANDARDS?

All Alternatives

There are no biological standards that pertain to the upland portions of the site. However, in aquatic and intertidal portions, the San Francisco Bay Conservation and Development Commission (BCDC) and the Army Corps of Engineers (COE) regulate fill, dredging and construction in the bay waters. In development proposals for Berkeley's waterfront, the individual projects that may involve fill, dredging or construction in the intertidal areas are common to all alternatives. For instance, fill, dredging and/or construction may be necessary for restoration of the Berkeley Beach, Strawberry Creek, or facilities for shoreline and water recreation in the North and South Basins (e.g., small boat activity, marina, fishing piers, beaches.)

BCDC would require a permit for any projects involving bay fill. Bay Plan policies, guiding BCDC action, acknowledge that "some bay fill may be necessary to create useable shoreline areas, protected water areas and park space"; these policies outline criteria for evaluating cases of acceptable bay fill. To protect bay resources, BCDC policies call for no net fill of the bay; mitigation for fill would be required. With the shoreline park and the Brickyard Cove nature preserve common to all alternatives, all of the development alternatives address BCDC's two primary objectives - protection of bay resources, and maximum public access to the shoreline.

The COE would require a permit for any fill, dredging, or construction in the bay that may be required by the projects cited above. The COE permit process involves review and comment by resource agencies, who review the proposed project for impacts on habitat resources and recommend mitigation for potential adverse affects. These agencies will be concerned primarily with protecting intertidal and aquatic habitats.

The State Lands Commissions (SLC) controls use of submerged land for public benefit in accordance with the public trust doctrine. Under this doctrine, both recreation and wildlife habitat are considered appropriate uses, along with navigation, commerce, and fisheries, of submerged lands in the public benefit. The City of Berkeley exercises this authority over submerged lands within its jurisdiction in the name of the SLC, and would have to review any proposed uses to verify conformance with the public trust doctrine.

As proposals for development of the shoreline and nearshore waters are common to all alternatives, the alternatives are equal in their potential to conform to or conflict with prevailing environmental regulation.

Criterion C.4

HOW DO THE ALTERNATIVES COMPARE IN ENHANCING THE UNDERSTANDING OF NATURAL PROCESSES AND MARINE EDUCATION...?

Enhancing the understanding of natural processes and marine education in the waterfront area would depend largely on the types of programs implemented to interpret the site's resources. At this stage, the opportunities for on-site nature interpretation and marine education presented by each alternative can be assessed by identifying whether an alternative would preserve or restore natural resources and processes on the site, and whether it would provide public access to view these resources and processes in a manner consistent with their protection. Natural processes may include shorebirds feeding; waterfowl roosting or feeding in nearshore waters; tidal changes exposing and submerging the mudflats, beaches and riprap intertidal areas; a freshwater creek emptying to the bay; etc. Essentially, the site's natural resources and processes are those wildlife habitats and uses, existing and potential, described and evaluated for each alternative under Criterion C.1, above. The alternatives, then, can be rated for the degree to which they provide opportunities for nature interpretation and marine education, as they have been rated under Criterion C.1 for the degree to which they preserve and enhance the site's wildlife values.

By developing the Shoreline Park and establishing the nature preserve on a portion of the Brickyard, all alternatives would provide some opportunity for nature interpretation and marine education. However, the level of development and the level of activity planned for the shoreline would determine to what extent wildlife use would be maintained or disturbed.

Alternatives 1 and 2 would provide the greatest opportunities for nature interpretation by designating the entire Brickyard a nature preserve which protects an integrated ecological unit of upland, possible riparian habitat (if Strawberry Creek is restored), mudflats, and open waters of Brickyard Cove. These alternatives provide the greatest amount of open space and, correspondingly, the lowest level of development, which would encourage continuing wildlife use of the site. Alternatives 3 and 4 propose a level of development that would disrupt wildlife use of the site upland and near-shore areas and limit opportunities for nature interpretation and marine education.

BIOLOGICAL RESOURCES

| Subarea | Alternative | Criterion C.1 | Criterion C.2 | Criterion C.4 |
|-----------------------|--|---|--------------------------------------|--|
| | | Overall Potential for Wildlife Value /a/ | Meeting or Exceeding Standards | Potential for Enhancing Understanding of Natural Processes |
| Shoreline Park | 1-4 | X | X | + |
| North Basin | 1-4 | | | |
| | Options: | | | |
| | - As is | + | X | X |
| | - Small boats, public access | - | - | - |
| | - Marina | -- | -- | -- |
| South Basin | 1-4 | | | |
| | Options: | | | |
| | - As is | ++ | X | X |
| | - Relocate creek, improve water quality/b/ | + | X | + |
| Nature Preserve/b/ | 1-4 | ++ | ++ | ++ |
| Berkeley Beach | 1-4 | X | X; - If it requires Bay fill | + |
| East Brickyard | 1 | ++ | N/A | ++ |
| | 2 | ++ | | ++ |
| | 3 | - | | - |
| | 4 | X | | + |
| East Meadow | 1 | X | N/A | X |
| | 2 | X | | X |
| | 3 | -- | | -- |
| | 4 | -- | | -- |

(Continued next page)

BIOLOGICAL RESOURCES (Continued)

| <u>Subarea</u> | <u>Alternative</u> | <u>Criterion C.1 Overall Potential for Wildlife Value /a/</u> | <u>Criterion C.2 Meeting or Exceeding Standards</u> | <u>Criterion C.4 Potential for Enhancing Understanding of Natural Processes</u> |
|--------------------------------|--------------------|---|---|---|
| North and Central Meadow | 1 | X | N/A | X |
| | 2 | + | | ++ |
| | 3 | - | | X |
| | 4 | -- | | + |
| Marina Edge | 1 | -- | N/A | -- |
| | 2 | + | | + |
| | 3 | -- | | -- |
| | 4 | -- | | -- |
| North Basin Strip | 1 | + | N/A | + |
| | 2 | - | | - |
| | 3 | - | | - |
| | 4 | -- | | -- |
| Horse Barns | 1 | + | N/A | + |
| | 2 | - | | - |
| | 3 | - | | - |
| | 4 | -- | | -- |

Values are given for mitigated conditions.

/a/ These ratings are based on the assumption that all open space areas proposed in Alternatives 1-4 would be landscaped, rather than left in their existing conditions. They reflect potential wildlife values of mitigated conditions in each subarea; actual wildlife values would depend greatly on the type of landscaping installed.

/b/ Enhancement of wildlife value in these areas considers the relocation of Strawberry Creek. This Creek serves as a City storm drain outlet and water quality is poor. The feasibility of improving water quality must be determined before relocation can be considered a useful enhancement measure.

NOISE

Introduction

Noise aspects of the development alternatives are evaluated in relation to the following criterion:

C2. Meeting or exceeding environmental standards

Table V.C.4 summarizes qualitatively how each alternative compares against the criterion for noise.

TABLE V.C.4: SUMMARY OF NOISE

| <u>Criterion</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------|--|---------------|---------------|---------------|
| C2 | | | | |
| Key: | | | | |
| ++ | most fulfills criterion | | | |
| + | more than fulfills criterion | | | |
| X | meets but does not exceed criterion | | | |
| - | does not fulfill criterion | | | |
| -- | least fulfills criterion | | | |
| +- | fulfills one part or measure of a criterion but fails to meet another aspect | | | |

SOURCE: ESA

Criterion C.2

HOW DO THE ALTERNATIVES COMPARE IN MEETING OR EXCEEDING ENVIRONMENTAL STANDARDS, SUCH AS AIR AND WATER QUALITY AND NOISE PROTECTION?

Shoreline Park

The Shoreline Park is projected to be subject to widely varying noise levels, depending on its proximity to the freeway. The portion which parallels the freeway would be subject to noise levels of 60-70 dBA CNEL; the portion along the North Meadow would be subject to noise levels of from less than 60 to 65 dBA CNEL./1/ Alternatives 1, 2, 3, and 4 propose a bike and pedestrian trail and various shoreline activities. These uses would be classified as normally acceptable under the City's Land Use Compatibility Guidelines for Community Noise./2/ However, noise levels near the freeway (65-70 dBA) could interfere with the enjoyment of the open space amenities offered in that area.

North Basin

The North Basin is projected to be subject to noise levels of from less than 60 to 65 dBA CNEL. Alternatives 1, 2, 3, and 4 propose several options including shoreline improvement for water recreation activities (boating and beach). These uses would be classified as normally acceptable under the City's Guidelines.

South Basin

The South Basin is projected to be subject to noise levels of from less than 60 to 65 dBA CNEL. Alternatives 1, 2, 3, and 4 propose several options including shoreline improvement for water recreation activities (wind surfing, boating, and beach). These uses would be classified as normally acceptable under the City's Guidelines.

Nature Preserve

The Nature Preserve is projected to be subject to noise levels of 60-65 dBA CNEL. Alternatives 1, 2, 3, and 4 propose nature interpretive uses, which are unclassified under the City's Guidelines. However, noise levels probably would not be of concern for these uses.

Berkeley Beach

The Berkeley Beach is projected to be subject to noise levels of 65-75 dBA CNEL. Alternatives 1, 2, 3, and 4 propose a bicycle and pedestrian trail and beach. These uses could be classified either as normally acceptable or normally unacceptable under the City's Guidelines.

East Brickyard

The East Brickyard is projected to be subject to noise levels of from 65 to more than 75 dBA CNEL. Alternatives 1 and 2 propose a nature preserve for this area; Alternative 4 proposes a public access easement. The compatibility of these uses with the projected noise levels is not classified under the City's Guidelines. However, noise levels could interfere with the enjoyment of the open space amenities offered in Alternatives 1, 2, and 4; this would be especially true near the freeway.

Alternative 3 proposes a hotel, which would be classified as either conditionally acceptable or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway. In addition, the hotel would be required under the State Title 25 Noise Insulation Standards/3/ to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL.

East Meadow

The East Meadow is projected to be subject to noise levels of from 65 to more than 75 dBA CNEL. Alternatives 1 and 2 propose a freeway buffer, possibly with playing fields, for this area. Playing fields or other park/playground uses would be classified either as normally acceptable or normally unacceptable under the City's Guidelines, depending on their proximity to the freeway. If general "open space" were proposed, noise levels could interfere with enjoyment of the open space amenities, especially near the freeway.

Alternative 3 proposes multi-unit housing and office uses. The housing would be classified either as conditionally acceptable, normally unacceptable, or clearly unacceptable under the City's Guidelines, depending on its proximity to the freeway, and would be required under Title 25 to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL. The office use would be classified either as normally acceptable, conditionally acceptable, or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway.

Alternative 4 proposes hotel, office, and retail support uses. The hotel would be classified either as conditionally acceptable or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway, and would be required under Title 25 to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL. The office and retail uses would be classified either as normally acceptable, conditionally acceptable, or normally unacceptable under the City's Guidelines, depending on their proximity to the freeway.

Central and North Meadow

The Central and North Meadow is projected to be subject to noise levels of from less than 60 to 65 dBA CNEL. Alternative 1 proposes a major multi-use open space. This type of use would be classified as normally acceptable under the City's Guidelines. Alternative 2 proposes a naturalistic park, which is unclassified under the City's Guidelines. However, noise levels probably would not be of concern for this use.

Alternative 3 proposes a civic/cultural concourse, which is unclassified under the City's Guidelines. However, noise levels probably would not be of concern for this use. Alternative 4 proposes hotel, office, and support retail uses. The hotel could be classified as either normally acceptable or conditionally acceptable under the City's Guidelines, and would probably be required (depending on its proximity to the freeway and to University Avenue) under Title 25 to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL. The office and retail uses would be classified as normally acceptable under the City's Guidelines.

Marina Edge

The Marina Edge is projected to be subject to noise levels of from less than 60 to less than 65 dBA CNEL. Alternative 1 proposes commercial recreation or a community conference center. These uses could be classified either as normally acceptable or conditionally acceptable under the City's Guidelines. Alternative 2 proposes "open space", which is unclassified under the City's Guidelines. However, noise levels probably would not be of concern for this use.

Alternative 3 proposes hotel and retail or restaurant uses. The hotel could be classified as either normally acceptable or conditionally acceptable under the City's Guidelines, and could be required (depending on its proximity to University Avenue and to Marina Boulevard) under Title 25 to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL. The retail and restaurant uses would be classified as normally acceptable under the City's Guidelines.

Alternative 4 proposes commercial recreation, specialty retail, or a public conference center. These uses could be classified either as normally acceptable or conditionally acceptable under the City's Guidelines.

North Basin Strip

The North Basin Strip is projected to be subject to noise levels of from less than 70 to more than 75 dBA CNEL. Alternative 1 proposes "open space", which is unclassified under the City's Guidelines. However, noise levels could interfere with the enjoyment of the open space amenities offered in that area; this would be especially true near the freeway.

Alternative 2 proposes hotel, conference center, and commercial recreation uses. The hotel would be classified either as conditionally acceptable or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway, and would be required under Title 25 to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL. The conference center would be classified as clearly unacceptable. Commercial recreation would be classified either as normally acceptable or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway.

Alternative 3 proposes housing and office uses. The housing would be classified either as conditionally acceptable, normally unacceptable, or clearly unacceptable under the City's Guidelines, depending on its proximity to the freeway, and would be required under Title 25 to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL. The office use would be classified either as normally acceptable, conditionally acceptable, or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway.

Alternative 4 proposes office, research and development, and support retail uses. The office and retail uses would be classified either as normally acceptable, conditionally acceptable, or normally unacceptable under the City's Guidelines, depending on their proximity to the freeway. Research and development also could be classified under any of these three categories under the City's Guidelines, depending on its proximity to the freeway, although more of the area would fall into the normally acceptable category than with office or retail uses.

Horse Barns

The Horse Barns area is projected to be subject to noise levels of from less than 65 to more than 75 dBA CNEL. Alternative 1 proposes "open space", which is unclassified under the City's Guidelines. However, noise levels could interfere with the enjoyment of the open space amenities offered in that area; this would be especially true near the freeway.

Alternative 2 proposes hotel, conference center, and commercial recreation uses. The hotel would be classified either as normally acceptable, conditionally acceptable, or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway, and would be required under Title 25 to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL. The conference center could be classified either as conditionally acceptable or clearly unacceptable, depending on its proximity to the freeway. Commercial recreation would be classified either as normally acceptable or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway.

Alternative 3 proposes housing and office uses. The housing would be classified either as normally acceptable, conditionally acceptable, normally unacceptable, or clearly unacceptable under the City's Guidelines, depending on its proximity to the freeway, and would be required under Title 25 to have an acoustical analysis performed to ensure that the annualized interior noise level would not exceed 45 dBA CNEL. The office use would be classified either as normally acceptable, conditionally acceptable, or normally unacceptable under the City's Guidelines, depending on its proximity to the freeway.

Alternative 4 proposes office, research and development, and support retail uses. The office and retail uses would be classified either as normally acceptable, conditionally acceptable, or normally unacceptable under the City's Guidelines, depending on their proximity to the freeway. Research and development also could be classified under any of these three categories under the City's Guidelines, depending on its proximity to the freeway, although more of the area would fall into the normally acceptable category than with office or retail uses.

Mitigation

Noise-sensitive uses proposed near the freeway would require the greatest amount of noise mitigation. Outdoor recreation uses in the Berkeley Beach area should be shielded from freeway noise by a sound barrier (wall or landscaped berm). Such a barrier might also be desirable to shield outdoor recreation uses elsewhere, especially in the Shoreline Park, East Brickyard, East Meadow, North Basin Strip, and Horse Barns areas for those alternatives which do not propose dense structures (which would act as noise barriers) in the latter four areas.

Residential structures in the East Meadow, North Basin Strip, and Horse Barns areas, and hotel and conference center structures in these areas and the East Brickyard area should be located at least 100 feet (less than 75 dBA CNEL) from the freeway right-of-way. Such structures located within about 300 feet (70-75 dBA CNEL) would require extensive acoustical isolation. (Installation of noise barriers along the freeway would shield only the first floor of the structures.)

Varying degrees of acoustical isolation would be required for structures located farther than 300 feet from the freeway right-of-way, depending on the distance, the type of use, and the degree of shielding provided by other intervening buildings.

Notes - Noise

/1/ Noise projections by Charles M. Salter Associates, Inc., as presented in Hall Goodhue Haisley and Barker, Environmental Reconnaissance of the Berkeley Waterfront, prepared for the Santa Fe Land Improvement Company, November, 1982.

/2/ City of Berkeley Planning Department, The City of Berkeley Master Plan, 1977, p. 174.

/3/ California Administrative Code, Title 25, "Noise Insulation Standards."

NOISE

Criterion C.2

| Subarea | Alternative | Park / Open Space / Recreation | Residential | Hotel | Conference Center | Office/ Retail | Research & Development |
|--------------------------------|-------------|--------------------------------------|-------------|-------|----------------------|-------------------|---------------------------|
| Shoreline Park | 1-4 | -/X | | | | | |
| North Basin | 1-4 | ++ | | | | | |
| South Basin | 1-4 | ++ | | | | | |
| Berkeley Beach | 1-4 | -/X | | | | | |
| <hr/> | | | | | | | |
| East Brickyard | 1 | -/X | | | | | |
| | 2 | -/X | | | | | |
| | 3 | | | X/+ | | | |
| | 4 | -/X | | | | | |
| <hr/> | | | | | | | |
| East Meadow | 1 | -/X | | | | | |
| | 2 | -/X | | | | | |
| | 3 | | -/X | | | +/++ | |
| | 4 | | | X/+ | | +/++ | |
| <hr/> | | | | | | | |
| North and Central Meadow | 1 | ++ | | | | | |
| | 2 | ++ | | | | | |
| | 3 | | | | ++ | | |
| | 4 | | | +/++ | | ++ | |
| <hr/> | | | | | | | |
| Marina Edge | 1 | ++ | | | +/++ | | |
| | 2 | ++ | | | | | |
| | 3 | | | +/++ | | ++ | |
| | 4 | ++ | | | +/++ | ++ | |
| <hr/> | | | | | | | |
| North Basin Strip | 1 | -/X | | | | | |
| | 2 | X/+ | | | | | |
| | 3 | | -/X | X/+ | --/X | +/++ | |
| | 4 | | | | | +/++ | +/++ |
| <hr/> | | | | | | | |
| Horse Barns | 1 | -/X | | | | | |
| | 2 | X/+ | | | | | |
| | 3 | | X/+ | +/++ | -/X | +/++ | |
| | 4 | | | | | +/++ | +/++ |

Values are given for unmitigated/mitigated conditions. Where multiple uses are proposed in subareas adjacent to the freeway, mitigation for all could be difficult and/or expensive, because the amount of space farther from the freeway is limited (i.e., not all the uses could be located away from the freeway, and would have to rely more on structural acoustical isolation).

AIR QUALITY

Introduction

Air quality aspects of the development alternatives are evaluated in relation to the following criterion:

C2. Meeting or exceeding environmental standards

Table V.C.5 summarizes qualitatively how each alternative compares against the criterion for air quality.

TABLE V.C.5: SUMMARY OF AIR QUALITY

| <u>Criterion</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------|---------------|---------------|---------------|---------------|
| C2 | | | | |

Key: ++ most fulfills criterion
+ more than fulfills criterion
X meets but does not exceed criterion
- does not fulfill criterion
-- least fulfills criterion
+- fulfills one part or measure of a criterion but fails to meet another aspect

SOURCE: ESA

Criterion C.2

HOW DO THE ALTERNATIVES COMPARE IN MEETING OR EXCEEDING ENVIRONMENTAL STANDARDS, SUCH AS AIR AND WATER QUALITY AND NOISE PROTECTION?

Local Carbon Monoxide Concentrations

A simplified screening model^{1/} was used to project approximate worst-case carbon monoxide (CO) concentrations, at buildout, at one of the intersections included in the traffic analysis. The University Avenue / San Pablo Avenue intersection was chosen because of the relatively high volumes and low speeds that would be expected there, which could result in high CO concentrations. The national one-hour standard is 35 ppm; the state one-hour standard is 20 ppm; and the national and state standard is 9 ppm.

Alternative 1 would generate worst-case CO concentrations of about 13.5 ppm for one hour and about 8.4 ppm for eight hours. Alternative 2 would generate worst-case CO concentrations of about 13.4 ppm for one hour and about 8.3 ppm for eight hours. These concentrations are within national and state standards.

Alternative 3 would generate worst-case CO concentrations of about 14.2 ppm for one hour and about 8.9 ppm for eight hours. The latter concentration approaches the national and state eight-hour standard, and might exceed it considering the precision of the simplified model used. Alternative 4 would

generate worst-case CO concentrations of about 14.8 ppm for one hour and about 9.3 ppm for eight hours. The latter concentration exceeds the national and state eight-hour standard.

On the basis of a comparison of traffic volumes at the intersection analyzed above with those at the interchanges of the I-80 freeway with University Avenue and with Ashby Avenue, it appears that the potential exists for excesses of the eight-hour CO standard at those interchanges also.

Note - Air Quality

/1/ The simplified screening model is derived from the CALINE3 air pollution model, and adjusted for results of CO hotspot monitoring performed in the Bay Area. Although the buildout traffic volumes used are projected for year 2010, emission rates are available only to year 2000.

AIR QUALITY

| <u>Intersection</u> | <u>Alternative</u> | <u>Criterion C.2 CO Standards</u> |
|-------------------------------------|--------------------|---------------------------------------|
| University Ave. / San Pablo Ave. | 1 | + |
| | 2 | + |
| | 3 | X |
| | 4 | - |

Values are given for unmitigated conditions.

CULTURAL RESOURCES

Introduction

Cultural resources aspects of the development alternatives are evaluated in relation to the following criterion:

C1. Conserving cultural resources

Table V.C.6 summarizes qualitatively how each alternative compares against the criterion for cultural resources.

TABLE V.C.6: SUMMARY OF CULTURAL RESOURCES

| <u>Criterion</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------|--|---------------|---------------|---------------|
| C1 | | | | |
| Key: | | | | |
| ++ | most fulfills criterion | | | |
| + | more than fulfills criterion | | | |
| X | meets but does not exceed criterion | | | |
| - | does not fulfill criterion | | | |
| -- | least fulfills criterion | | | |
| +- | fulfills one part or measure of a criterion but fails to meet another aspect | | | |

SOURCE: ESA

Criterion C.1

HOW DO THE ALTERNATIVES COMPARE IN CONSERVING...CULTURAL RESOURCES?

An archaeological records search for the project area conducted in 1982 indicated that there were no previously recorded archaeological sites, National Register sites, or California Historical Landmarks situated within or immediately adjacent to the project boundary. Prior to landfilling, the project area had been subject to more or less continuous inundation. As such, the project area was determined to be of low archaeological sensitivity. However, there remains the possibility of subsurface archaeological materials.

Any subsurface materials would be best preserved in areas designated for open space use or minimal development, or protected under the asphalt layer of streets, parking lots, or playing courts. Structure development would provide minimal protection of possible archaeological resources. In the Meadow and North Basin Strip, where the landfill must be sealed and development cannot excavate or otherwise disrupt this seal, possible archaeological resources would be trapped below development but generally undisturbed.

Overall, Alternatives 1 and 2, which designate the greatest amount of open space, would better conserve potential (but unlikely) subsurface archaeological materials than would Alternatives 3 and 4, which develop roughly half the project site.

BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Traffic and Transportation

Prepared by DKS Associates

V. EVALUATION OF ALTERNATIVES

D. TRAFFIC AND TRANSPORTATION

SUMMARY

The four generic land use alternatives for the Berkeley waterfront were evaluated with respect to their traffic impacts; ability to induce transit use and shared rides; potential for vehicular conflicts with bicycle, pedestrian and handicapped circulation; and parking demand.

Alternative 1

This alternative would add about 13,000 daily and about 1200 PM peak hour vehicle trips to the roadway system. The Gilman interchange and the University/Sixth, University/Northbound Ramps and University/West Frontage Road intersections would operate at what is normally considered an unacceptable V/C ratio (greater than 0.90). If roadway widenings similar to those proposed as part of the Santa Fe plan were added to the Caltrans modifications, both the Gilman interchange and the University/West Frontage Road intersection would have adequate capacity to operate at an acceptable V/C ratio (less than 0.90).

None of the land uses contained in Alternative 1 are strong candidates for transit and ridesharing use. This alternative would have the least potential for significant non-auto travel demand.

Alternative 1 has two distinct advantages with respect to minimizing vehicular/non-vehicular conflicts: it generates substantially less traffic than any of the other alternatives and it converts West Frontage Road, between University Avenue and Ashby Avenue, to an exclusive bicycle/pedestrian facility. As a result bicyclists and pedestrians would be able to travel between West Berkeley and the waterfront and within the waterfront with less competition from motorized vehicles.

This alternative would provide 77 percent of its estimated parking demand. This scheme could result in a shortfall of on-site parking during the weekends because all of the uses, with the possible exception of the conference center, have peak use periods on the weekends.

Alternative 2

This alternative would add about 14,000 daily and 1200 PM peak hour vehicle trips to the roadway system. The intersection capacity problems of this alternative are similar in magnitude and location to those of Alternative 1 and would require the same mitigation measures.

This alternative has a slightly higher ability to induce transit use and ridesharing than Alternative 1. Hotel employees are the primary trips that could be induced to ride transit if a convenient bus route is provided to serve the residential areas of Berkeley and BART. Additionally, limited reduction in private car usage could occur with a hotel operated shuttle van to the airport.

Development under Alternative 2 is concentrated around the Gilman Street interchange. The traffic generated at this location would increase the conflicts for bicyclists and pedestrians travelling on the bike lanes and sidewalks along Gilman Street between the waterfront and West Berkeley.

Proposed parking facilities would satisfy 71 percent of the estimated demand. The peak use period for the hotel would occur during the late evening and night time, while the peak use period for the retail and the recreational uses would occur on weekend days. The total number of spaces included in this alternative might be sufficient to serve peak demand times if the parking spaces associated with the open space areas are close enough to the developed area to make shared use of parking feasible.

Alternative 3

This alternative would add about 24,000 daily and 3500 PM peak hour vehicle trips to the roadway system. If a TSM program similar to Santa Fe's were applied to reduce the PM peak hour office trip generation of Alternative 3 by 35 percent, the total PM peak hour trip generation would be reduced by almost 25 percent. This reduction combined with an additional westbound lane on Gilman Street and the Santa Fe roadway widenings would improve the V/C ratio at the Gilman interchange to an acceptable level. Roadway widenings at the Ashby/West Frontage Road intersection would create additional capacity for Berkeley waterfront traffic removing some of the burden from the University and Gilman interchanges. However, the total capacity of the three interchanges probably would barely be sufficient to produce acceptable operating conditions at all locations with the volume of traffic generated by Alternative 3 during the PM peak hour (even with a TSM program).

The office and residential uses contained in Alternative 3 have the greatest ability to induce transit and ridesharing, particularly if there are strong commitments on the part of the office complex to support a ridesharing program and there is an expansion of transit service. The rerouting of AC Transit San Francisco express commuter services to serve the site would be an important element in inducing transit use for residents since almost 40 percent of the resident trips are projected to cross the Bay Bridge. Additionally, improved transit access to and from the North Berkeley BART station would be important to both the office and residential uses.

This alternative provides an extensive bicycle/pedestrian system throughout the waterfront affording a high level of accessibility for the non-vehicular travel. The disadvantage of a scheme which provides a high level of accessibility for all modes of travel, is the potential increase in conflicts

between autos/buses and pedestrians/bicyclists. With the increased traffic generated by the development, bicyclists and pedestrians would find it more difficult to negotiate through traffic to use the connections provided for them between the waterfront and West Berkeley at Gilman Street, University Avenue, and Ashby Avenue.

Alternative 3 would provide 76 percent of its estimated parking demand. The broad range of uses proposed under this scheme would allow a potentially high degree of shared parking. Office parking demand peaks during the mid-day during the week, hotel peaks at night, and the retail and open space peaks would occur on weekend days. The conference center could peak either during the week or on the weekend depending on the nature of the facility. The large number of office parking spaces provided in this alternative would therefore be potentially available to offset the shortfall of parking for the other uses.

The adequacy of the office parking must also be considered independently. While office employees could potentially use the open space parking during the weekday as overflow, it may not be desirable to have the office parking spilling into the recreational areas. If the use of transit and ridesharing is increased to the site as previously identified, the proposed amount of office parking would be adequate to meet the reduced office demand.

The number of spaces allocated for residential use would generally be assumed to be designated for exclusive use of residents and guests to avoid the infiltration of non-residential traffic.

Alternative 4

This alternative would add about 50,000 daily and 6000 PM peak hour vehicle trips to the roadway system. Roadway widenings at the Ashby/West Frontage Road intersection would create additional capacity at the Ashby interchange for Berkeley waterfront traffic removing some of the burden from the University and Gilman interchanges. However, the total capacity of the three interchanges probably would not be sufficient (even with the roadway widenings proposed by Santa Fe and the widenings of Gilman Street and University Avenue proposed under Alternative 3) to produce acceptable operating conditions at all locations with the volume of traffic generated by Alternative 4 during the PM peak hour. Based on the analysis of V/C ratios and the impacts of possible mitigation measures, it is concluded that full mitigation of the traffic impacts of Alternative 4 would probably require substantial modifications to the roadway system (e.g., dedicated on- and off-ramps for the Berkeley waterfront) and/or the Santa Fe TSM program (e.g., restrictions on employee auto usage or time of arrival and departure from the site).

Alternative 4 has a major allocation of land use in office as well as a large hotel. The large office complex provides a strong base for developing an internal transportation program designed to promote ridesharing. Additionally, the number of employees is almost three times that in

Alternative 3 which should provide a strong ridership base for expanded transit service between the waterfront and the rest of Berkeley. Frequent service and convenient through routes are important attributes to inducing transit use. This alternative has the greatest absolute ability to induce transit use and ridesharing. Both this alternative and Alternative 3 have similar abilities to induce transit use and ridesharing as a percent of their automobile use.

Alternative 4 has the most extensive, exclusive bicycle/pedestrian network of all the alternatives and therefore offers a high degree of accessibility. The proposed intensity of development in this alternative could lead to a more active street life for the waterfront area, but it also would increase the potential conflicts between autos and bicyclists and pedestrians both within and approaching the waterfront due to the magnitude of vehicular traffic generated by the alternative.

This alternative would provide 64 percent of its estimated parking demand. The difference in times of peak use periods of the office, hotel, retail and open space would afford ample opportunities for the sharing of parking facilities. The greatest potential for a parking shortfall would occur on weekdays when office spaces would be at maximum use. If the conference center were marketed as a primarily weekend use facility, the shortfall could be minimized. However, the parking shortage would be acute if the conference center experienced peak use during the weekdays.

As in Alternative 3, the adequacy of 2.5 parking spaces/1,000 gross square feet of office space would depend on the ability to achieve a reasonable transit share and high level of ridesharing activity.

CRITERIA D-1

How do the alternatives compare in terms of their trip generation and subsequent impacts on service and congestion for transit and auto movement in the City and region on a daily and peak-period basis?

Measurement Methodology

Trip Generation. The trip generation impacts of the alternatives were measured by the total number of vehicle trips generated per day and during the afternoon peak hour. The average vehicle trip generation rates shown in Table D-1 were reduced to account for trips that would be contained completely within the Berkeley waterfront (i.e., "internal" trips) according to the assumed percentages of internal trips shown in Table D-2. For the special case of Alternative 4, the Santa Fe Plan, the trip generation rate for office uses was reduced an additional 15 percent on a daily basis and 35 percent during the PM peak hour to account for the assumed vehicle trip reductions caused by the Transportation System Management (TSM) program included in the alternative./1/ The resulting "external" trip rates were applied to the land uses that make up each alternative, and the resulting daily and PM peak hour volumes of external trips calculated for each alternative are listed in Table D-3.

Traffic Impacts. The impact assessment presented in this report examines local intersection impacts quantitatively and cumulative traffic impacts qualitatively. The effect of traffic from each of the alternatives on the PM peak hour volume-to-capacity (V/C) ratios at the Powell, Ashby, University and Gilman interchanges and the University/San Pablo and University/Sixth intersections was used to measure the localized traffic impact of the alternatives. All traffic impacts were analyzed for an assumed horizon year of 2010, at which time all alternatives were assumed to be fully constructed and occupied.

Caltrans' year 2005 forecasts (based on the Association of Bay Area Governments' Projections 79) of PM peak hour volumes on I-80 and the freeway ramps in Berkeley were extrapolated to the year 2010 by accounting for traffic increases due to continuing regional growth and reductions in I-80 volumes due to a decline in Eastbay development in favor of an increase in Contra Costa development./2/ These two adjustments produced a set of year 2010 volumes that are five percent lower than the year 2005 volumes, which is consistent with changes in land use development patterns between the time of Caltrans' original forecasts and the latest ABAG forecasts, Projections 83.

Two traffic bases were used to identify the range of year 2010 volumes in the vicinity of the Berkeley Waterfront:

TABLE D-1:

TRIP GENERATION RATES
BERKELEY WATERFRONT ALTERNATIVES

| <u>Land Use</u> | <u>Daily Trip Rate</u> | <u>Unit</u> | <u>In</u> | <u>PM Peak Hour</u> | <u>Total</u> |
|-----------------------------------|----------------------------|-------------|-----------|---------------------|--------------|
| | | | | <u>Out</u> | |
| Office/R&D (over) 200,000 GSF) | 10.90 | 1,000 GSF | 0.24 | 1.80 | 2.04 |
| Hotel (assume 85% occupancy) | 10.50 | occ. room | 0.36 | 0.37 | 0.73 |
| Support Retail | no external trips | 1,000 GSF | | | |
| Specialty Retail/ Comm. Rec | 66.70 | 1,000 GSF | 2.90 | 3.08 | 5.90 |
| Conf. Center/ Cultural Ctr. | 10.10 | 1,000 GSF | 0.25 | 2.28 | 2.53 |
| Open Space | 5.10 | acre | 0.18 | 0.21 | 0.39 |
| Residential | 5.20 | DU | 0.34 | 0.17 | 0.51 |

Notes:

- 1 Research and development is assumed to have the same trip generation rates as office.
- 2 Support retail is assumed to be two percent of the office space in each alternative plus an additional 20,000 GSF in Alternative 3.
3. Specialty retail rates based on ITE trip generation for small shopping centers (100,000 to 199,000 GSF) trip rates.
4. The conference center and cultural center were assumed to be similar uses with respect to trip generation.

SOURCE: ITE Trip Generation Manual, Third Edition, 1982, and Caltrans 9th Progress Report on Trip Generation, July 1974.

TABLE D-2:

INTERNAL TRIP FACTORS/a/
BERKELEY WATERFRONT ALTERNATIVES

| <u>Land Use</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|--------------------------------------|---------------|---------------|---------------|---------------|
| Office | -- | -- | 0% | 0% |
| Hotel | -- | 0% | 15% | 15% |
| Support Retail | -- | -- | 100% | 100% |
| Specialty Retail/ Commercial Rec. | 5% | 10% | 25% | 25% |
| Conf. Center/ Cult. Center | 10% | 10% | 10% | -- |
| Open Space | 0% | 5% | 10% | 5% |
| Residential | -- | -- | 20% | -- |

/a/ Source: Santa Fe's Concept for the Berkeley Waterfront Transportation Analysis, January 1985, Barton-Aschman Associates, Inc., and DKS Associates.

TABLE D-3:

EXTERNAL TRIP GENERATION FOR
BERKELEY WATERFRONT ALTERNATIVES

| Land Use | Alt. 1 | | Alt. 2 | | Alt. 3 | | Alt. 4/c/ | |
|-------------------------------|--------|-------|--------|------|--------|------|-----------|------|
| | ADT/a/ | PM/b/ | ADT | PM | ADT | PM | ADT | PM |
| FULL BUILD-OUT | | | | | | | | |
| Office | -- | -- | -- | -- | 12480 | 2340 | 27810 | 3990 |
| Hotel | -- | -- | 6830 | 470 | 4900 | 340 | 13350 | 930 |
| Spec. Retail/ Comm. Rec. | 12050 | 1080 | 6000 | 530 | 750 | 70 | 5000 | 620 |
| Conf. Center/ Cult. Center | 90 | 20 | 460 | 120 | 1370 | 350 | 1520 | 380 |
| Open Space | 800 | 60 | 600 | 50 | 450 | 30 | 390 | 30 |
| Residential | -- | -- | -- | -- | 3990 | 390 | -- | -- |
| TOTAL | 12940 | 1160 | 13890 | 1170 | 23940 | 3520 | 50070 | 5950 |

/a/ ADT is the Average Daily Traffic Volume without internal trip reduction.

/b/ PM peak hour of traffic generation.

/c/ Assumes an office trip reduction of 15 percent daily and 35 percent during the PM peak hour due to TSM strategies proposed as part of the Santa Fe development proposal.

1. Low Volume Base. The 2010 Caltrans volumes were adjusted to remove any volumes projected to divert from the freeway to West Frontage Road. This adjustment was based on observed diversion patterns and resulted in the reduction of West Frontage Road year 2010 traffic volumes by about 500 vehicles in each direction during the PM peak hour./3/ The Caltrans volumes for the freeway ramps then were combined with forecast year 2010 local street traffic volumes to produce a complete set of waterfront traffic volumes with little or no diversion to West Frontage Road.
2. High Volume Base. The Caltrans 2010 projections of freeway ramp traffic and diversion to West Frontage Road were adjusted to reflect the existing magnitude and pattern of diversion. These Caltrans volumes then were combined with the forecast year 2010 local street traffic volumes to produce a set of future volumes with diversion to West Frontage Road similar to current conditions.

The PM peak hour traffic associated with each alternative was added to the base volumes on the street and highway network using the assumed year 2010 directional distributions shown in Table D-4. Table D-5 lists the resulting V/C ratios for each of the alternatives when their traffic is added to 2010 base traffic on the freeway ramps and local streets. For comparison, the "No Project" V/C ratios also are listed.

The quantitative assessment of local intersection impacts assumed that Caltrans forecasts of ramp volumes accurately portrayed traffic increases due to Berkeley development east of I-80 and did not include any growth attributable to development of the Santa Fe lands at the waterfront. Therefore, traffic from the waterfront alternatives was treated as being additive to the projected ramp and intersection volumes. Total ramp and street volumes could, however, be lower to the degree that Berkeley waterfront development captures some of the forecast Berkeley growth.

The following assumptions also are embodied in the impacts presented in Table D-5:

1. A high volume scenario with diversion to West Frontage Road is not possible with Alternatives 1 and 2 because the circulation system for these alternatives does not contain a frontage road for freeway diversion along the waterfront between University and Ashby Avenues.
2. All roadway widenings and modifications to the proposed Caltrans freeway and interchange improvements included in Alternative 4, the Santa Fe Plan, were considered to be part of the roadway system serving the site for analysis of this alternative (see Appendix D-1).
3. The current site of Golden Gate Fields racetrack is assumed for the purposes of this analysis to be vacant in the year 2010. This assumption was made due to the current uncertainty about the types and intensities of land uses that might replace the racetrack when its lease expires in 1997. The impact of developing this site is, however, analyzed qualitatively in this report.

TABLE D-4:

TRIP DISTRIBUTION YEAR 2010
BERKELEY WATERFRONT ALTERNATIVES

| <u>To/From</u> | <u>Office/ R & D/a/</u> | <u>Retail/ Open Space/b/</u> | <u>Hotel/ Conf. Center/b/</u> | <u>Residential/a/</u> |
|-----------------------------|---------------------------------|----------------------------------|-----------------------------------|-----------------------|
| North on I-80 | 27.5% | 30.0% | 13.0% | 13.7% |
| San Rafael Bridge | 26.2% | -- | -- | 1.4% |
| I-80 North | 1.3% | -- | -- | 12.3% |
| South on I-80 | 43.4% | 30.0% | 54.0% | 66.0% |
| Bay Bridge | 5.0% | -- | -- | 39.0% |
| Hwy 17 South | 16.3% | -- | -- | 14.0% |
| I-580 East | 12.4% | -- | -- | 9.6% |
| Hwy 24 East | 9.7% | -- | -- | 3.4% |
| East to Berkeley | 25.0% | 30.0% | 28.0% | 18.0% |
| South/East to Emeryville | <u>4.1%</u> | <u>10.0%</u> | <u>5.0%</u> | <u>2.3%</u> |
| TOTAL | 100.0% | 100.0% | 100.0% | 100.0% |

/a/ Source: MTC Year 2000 Journey-to-Work tables.

/b/ Source: Santa Fe's Concept for the Berkeley Waterfront Transportation Analysis, January 1985, Barton-Aschman Associates, Inc.

TABLE D-5: YEAR 2010 PM PEAK HOUR VOLUME-TO-CAPACITY RATIOS
AT BERKELEY WATERFRONT AREA INTERSECTIONS

| <u>Intersection</u> | <u>No Project</u> <u>Low/High</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> <u>Low/High</u> | <u>Alt. 4/a/</u> <u>Low/High</u> |
|---------------------------------------|--------------------------------------|---------------|---------------|----------------------------------|-------------------------------------|
| 1.Gilman Street Interchange | 0.78/1.14 | 0.96 | 0.98 | 1.51/1.89 | 1.27/1.45 |
| 2.University/San Pablo | 0.83/0.83 | 0.84 | 0.84 | 0.86/0.86 | 0.92/0.93 |
| 3.University/Sixth St. | 0.93/0.93 | 0.97 | 0.96 | 0.98/0.98 | 1.00/1.00 |
| 4.University/Northbound Ramps | 1.18/1.14 | 1.29 | 1.26 | 1.36/1.43 | 1.50/1.47 |
| 5.University/W. Frontage Rd. | 0.44/0.88 | 0.91 | 0.84 | 1.75/2.22 | 1.58/1.78 |
| 6.Ashby/Bay St. | 0.72/0.65 | 0.72 | 0.72 | 0.77/0.69 | 0.80/0.71 |
| 7.Ashby/NB Ramps | 0.78/0.78 | 0.78 | 0.78 | 0.81/0.81 | 0.82/0.82 |
| 8.Ashby SB Off/W. Frontage Rd. | 0.43/0.82 | 0.43 | 0.43 | 0.67/1.03 | 0.83/1.10 |
| 9.Ashby SB On/W. Frontage Rd. | | | | | |
| 10.Ashby Ave./W. Frontage Rd | 0.88/0.94 | 0.88 | 0.88 | 1.05/1.14 | 1.13/1.23 |
| 11.W. Frontage Rd./Private Access Rd. | 0.87/1.04 | 0.89 | 0.88 | 0.93/1.11 | 0.98/1.14 |
| 12.Powell Interchange | 1.36/1.47 | 1.40 | 1.45 | 1.46/1.57 | 1.49/1.60 |

/a/ Includes 35 percent reduction in office trip generation due to TSM program and all street widenings listed in Appendix D-1.

General Impacts and Mitigation

Vehicular traffic generation by the generic land use alternatives would add about 13,000 to 50,000 trips daily to the street and freeway system by the year 2010. During the PM peak hour the alternatives would contribute about 1200 to 6000 vehicles. By comparison, I-80 carried an average daily volume of 187,000 vehicles and a PM peak hour volume of 16,900 vehicles past the Berkeley waterfront in 1983. Also by comparison, the total two-way volume on University Avenue west of San Pablo Avenue was about 40,000 vehicles per day in 1983. The PM peak hour volume on this same portion of University Avenue was about 2,700 vehicles in 1984.

Afternoon peak hour conditions were observed to be most critical at the intersections in the vicinity of the Berkeley waterfront. Land uses proposed for the waterfront would contribute to the PM peak hour problem in different degrees. Hotels, open space, retail and residential uses generate seven, eight, nine and eleven percent, respectively, of their total daily trip generation during the PM peak hour. On the other hand, offices and conference centers would have as much as 19 and 25 percent, respectively, of their daily trip generation concentrated during the PM peak hour. It is this greater concentration of traffic that makes TSM programs so important when trying to minimize PM peak hour impacts.

Serious capacity problems at the Powell Street interchange (see Table D-5) would not be a major constraint on Berkeley waterfront development since only a small amount of local traffic would pass through this interchange to reach the waterfront. For this reason, mitigation of the impact of Berkeley waterfront alternatives on this interchange is not considered in this report.

The traffic mitigation measure included in all alternatives is the set of modifications planned by Caltrans for West Frontage Road and the Powell, Ashby, University and Gilman interchanges. Caltrans proposes to narrow West Frontage Road to one lane in each direction and to consolidate the northbound off-ramp traffic to Eastshore Highway and eastbound University Avenue into a single off-ramp intersecting University Avenue. These two changes represent significant capacity reductions for the interchange.

The elimination of West Frontage Road between Ashby and University Avenues that is proposed as part of Alternatives 1 and 2 would minimize freeway diversion to West Frontage Road by removing a critical link in the diversion path. At the same time, it would increase the traffic volumes on the heavily loaded northbound off-ramp at University Avenue because the Ashby interchange could no longer serve as an access route to the Berkeley waterfront.

The most serious constraint on Berkeley waterfront development is the capacity of the University Avenue overpass and its intersection with the northbound off-ramp and the proposed connection to Eastshore Highway. As shown in Table D-5, year 2010 volumes on University Avenue would exceed the capacity of the eastern side of the interchange even without waterfront development. These Caltrans volume forecasts appear to be based on the

assumption that employment growth forecast for Berkeley would occur downtown and not at the waterfront. If Berkeley waterfront development were to capture some of this forecast employment growth, PM peak hour volumes on westbound University Avenue probably would not be as high and interchange operations would be improved.

Projected growth in downtown Berkeley employment either without, or in addition to, waterfront development probably would require widening University Avenue to three lanes in each direction from Sixth Street to West Frontage Road.

Alternative 1

This alternative would add about 13,000 daily and about 1200 PM peak hour vehicle trips to the roadway system. The Gilman interchange and the University/Sixth, University/Northbound Ramps and University/West Frontage Road intersections would operate at what is normally considered an unacceptable V/C ratio (greater than 0.90). If roadway widenings similar to those proposed as part of the Santa Fe plan were added to the Caltrans modifications, both the Gilman interchange and the University/West Frontage Road intersection would have adequate capacity to operate at an acceptable V/C ratio (less than 0.90). However, it would require three westbound through lanes on University Avenue to mitigate the traffic impacts of the projected PM peak hour volumes at the other University Avenue intersections.

Alternative 2

This alternative would add about 14,000 daily and 1200 PM peak hour vehicle trips to the roadway system. As shown in Table D-5, the intersection capacity problems of this alternative are similar in magnitude and location to those of Alternative 1 and would require the same mitigation measures.

Alternative 3

This alternative would add about 24,000 daily and 3500 PM peak hour vehicle trips to the roadway system. With almost no freeway diversion to West Frontage Road (the low volume scenario in Table D-5), only the University/San Pablo, Ashby/Bay, Ashby/Southbound On-Off Ramps and Ashby/Northbound Ramps intersections would operate at acceptable V/C ratios. The Santa Fe Plan mitigations applied to the Gilman interchange would improve the V/C ratio from 1.51 to 1.09 -- indicating that additional mitigations would be needed. Even the provision of three westbound lanes on Gilman street through the interchange would only reduce the V/C ratio to 0.96.

If a TSM program similar to Santa Fe's were applied to reduce the PM peak hour office trip generation of Alternative 3 by 35 percent, the total PM peak hour trip generation would be reduced by almost 25 percent. This reduction combined with an additional westbound lane on Gilman Street and the Santa Fe roadway widenings would reduce the V/C ratio at the Gilman interchange to 0.87. The TSM program coupled with a third westbound lane on University and

Santa Fe's roadway widenings would lower the V/C ratio to 0.93 and 0.95 at the University/West Frontage and University/Northbound Ramps intersections, respectively. Roadway widenings at the Ashby/West Frontage Road intersection would create additional capacity for Berkeley waterfront traffic removing some of the burden from the University and Gilman interchanges. However, the total capacity of the three interchanges probably would barely be sufficient to produce acceptable operating conditions at all locations with the volume of traffic generated by Alternative 3 during the PM peak hour (even with a TSM program). Therefore, from a traffic engineering viewpoint, the level of trip generation exhibited by Alternative 3 with a TSM program (about 2700 PM peak hour trips) might represent a reasonable upper limit on the amount of traffic from Berkeley waterfront development that could be accommodated by local intersections without major freeway and interchange improvements.

Alternative 4

This alternative would add about 50,000 daily and 6000 PM peak hour vehicle trips to the roadway system. With almost no freeway diversion to West Frontage Road (the low volume scenario in Table D-5), only the Ashby/Bay, Ashby/Southbound On-Off Ramps and Ashby/Northbound Ramps intersections would operate at acceptable V/C ratios. Even with the anticipated 35 percent reduction in PM peak hour office trip generation and the proposed Gilman and West Frontage Road widenings, the Gilman Street interchange would operate at 127 percent of capacity. With an additional westbound lane on Gilman Street the interchange would operate at 114 percent of capacity. At the University Avenue interchange, a third westbound lane on University would reduce the V/C ratio on the east side of the interchange from 1.50 to 1.24.

Roadway widenings at the Ashby/West Frontage Road intersection would create additional capacity at the Ashby interchange for Berkeley waterfront traffic removing some of the burden from the University and Gilman interchanges. However, the total capacity of the three interchanges probably would not be sufficient to produce acceptable operating conditions at all locations with the volume of traffic generated by Alternative 4 during the PM peak hour. Based on the analysis of V/C ratios and the impacts of possible mitigation measures, it is concluded that full mitigation of the traffic impacts of Alternative 4 would probably require substantial modifications to the roadway system (e.g., dedicated on- and off-ramps for the Berkeley waterfront) and/or the Santa Fe TSM program (e.g., restrictions on employee auto usage or time of arrival and departure from the site).

Cumulative Traffic Impacts

It was mentioned earlier in this report that the Golden Gate Fields racetrack site was considered vacant in 2010 due to uncertainty about the amount of development that might replace the racetrack when its lease expires. Santa Fe Land Development Company has indicated to the City's waterfront consultants that as much as four million square feet of development could be considered for the Albany site currently leased by the Pacific Racing Association./4/ This amount of development is comparable to their current proposal for the Berkeley waterfront lands.

At the same time, a planning study currently is underway in Emeryville to develop a specific plan for development of the Bayfront area bordered by I-80, Powell Street, Ashby Avenue and the Southern Pacific railroad tracks. Up to 5.2 million square feet of development is proposed for this 135 acre site./5/ The mix of land uses being considered could generate up to 64,000 daily trips.

Table D-6 lists the percentage of PM peak hour traffic from each of the Berkeley waterfront alternatives that would use the Gilman and Ashby interchanges. Since access to the Albany waterfront would be provided by both the Buchanan and Gilman interchanges, potential traffic generation from Santa Fe's Albany lands would compete with Berkeley waterfront development for the available capacity of the Gilman interchange. At the same time, traffic from Emeryville's Bayfront area could be competing for Ashby Avenue interchange capacity. Competition for available interchange capacity from both Albany waterfront and Emeryville Bayfront development could reduce the local intersection and interchange capacity available for Berkeley waterfront development by as much as 50 percent. The magnitude of the potential impact from Albany and Emeryville development would require a policy decision by Berkeley as to whether or not development in these adjacent cities should be considered in the development of a preferred alternative for the Berkeley waterfront.

TABLE D-6: PERCENTAGE OF TOTAL PM PEAK HOUR TRAFFIC
 USING ASHBY AND GILMAN INTERCHANGES

| <u>Interchange</u> | <u>Alt. 1</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|--------------------|---------------|---------------|---------------|---------------|
| Gilman | 32% | 34% | 36% | 32% |
| Ashby | 0% | 0% | 13% | 12% |

CRITERIA D-2

How do the alternatives compare in terms of their dependence on the automobile and ability to induce transit use and shared rides?

Measurement Methodology

Transit use and shared rides are transportation alternatives that are highly dependent on the perceived ease and convenience of their use. Transit is used by persons who find it convenient in terms of access and schedule and who do not have a demand for their private automobile. Carpooling and other ridesharing users have similar characteristics with the addition of the need

to find persons to share in the trip. Recognizing these relationships, the ability to induce transit use and ridesharing is very dependent on the type of land use involved. Table D-7 identifies the land uses considered for the Berkeley waterfront and the expected range of mode split for transit use and ridesharing. There are a number of factors that influence the ability to reduce the number of single occupant auto drivers. Some of these factors are discussed in subsequent paragraphs associated with each of the land use types.

TABLE D-7: TRANSIT AND RIDESHARING ATTRACTIVENESS
BERKELEY WATERFRONT ALTERNATIVES

| <u>Land Use</u> | <u>Transit Use</u> | <u>Ridesharing Use</u> |
|-------------------|--------------------|------------------------|
| Office | 5-25% | 5-25% |
| Support Retail | N.A. | N. A. |
| Specialty Retail | * | * |
| Hotel | 1-5% | 1-5% |
| Conference Center | * | * |
| Open Space | * | * |
| Residential | 5-25% | 5-25% |

* Negligible

Office and residential uses are the two land use types that are most likely to induce transit or ridesharing uses. Convenient transit routes designed to reach key transit hubs such as the North Berkeley BART station would be an important incentive to induce transit use. For residential trips, commuter express service to the Transbay Terminal would likely provide an additional inducement. Ridesharing can be greatly enhanced through a formal ridesharing program and the use of a transportation coordinator to facilitate establishing carpools and vanpools. Additionally, if employers provide vehicles for a vanpool program they can be highly successful. Other land uses listed in Table D-7 are much less conducive to encouraging transit use and ridesharing as they are much more dependent on the convenience of private autos for access.

General Evaluation

Each of the alternatives has a different land use mix and different levels of automobile use. Table D-8 gives a generalized sense of how each alternative compares in terms of inducing transit and ridesharing.

TABLE D-8: TRANSIT AND RIDESHARING POTENTIAL
BERKELEY WATERFRONT ALTERNATIVES

| <u>Land Use</u> | Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 |
|-----------------|--------|--------|--------|--------|
| Office | - | - | high | high |
| Hotel | - | low | low | low |
| Spec. Retail | * | * | * | * |
| Conf. Center | * | * | * | * |
| Open Space | * | * | * | * |
| Residential | - | - | high | - |

*negligible

Alternative 1

Alternative 1 is composed of specialty retail, a small conference center and open space. None of these land uses are strong candidates for transit and ridesharing use. This alternative would have the least potential for significant non-auto travel demand.

Alternative 2

This alternative has similar uses to Alternative 1 but with less specialty retail and the addition of a hotel. The hotel has limited potential for transit and ridesharing. Hotel employees are the primary trips that could be induced to ride transit if a convenient bus route is provided to serve the residential areas of Berkeley and BART. Additionally, limited reduction in private car usage could occur with a hotel operated shuttle van to the airport. This alternative has a slightly higher ability to induce transit use and ridesharing than Alternative 1.

Alternative 3

Alternative 3 has the same uses as shown for Alternatives 1 and 2 but smaller and adds both office and residential uses. The latter two uses have the greatest ability to induce transit and ridesharing, particularly if there are strong commitments on the part of the office complex to support a ridesharing program and there is an expansion of transit service. This Alternative is the only alternative with residential uses. The rerouting of AC Transit San Francisco express commuter services to serve the site would be an important element in inducing transit use for residents since almost 40 percent of the resident trips are projected to cross the Bay Bridge. Additionally, improved transit access to and from the North Berkeley BART station would be important to both the office and residential uses. Considering the mix of land uses and the relative magnitude of the office and residential uses in this alternative, this alternative and Alternative 4 have the greatest ability to induce transit and ridesharing usage as a percent of total automobile use. In absolute terms, Alternative 4 with its greater amount of office space would have the largest ability to induce transit and ridesharing.

Alternative 4

Alternative 4 has a major allocation of land use in office as well as a large hotel. The large office complex provides a strong base for developing an internal transportation program designed to promote ridesharing. Additionally, the number of employees is almost three times that in Alternative 3 which should provide a strong ridership base for expanded service between the waterfront and the rest of Berkeley. Frequent service and convenient through routes are important attributes to inducing transit use. This alternative has the greatest absolute ability to induce transit use and ridesharing. Both this alternative and Alternative 3 have similar abilities to induce transit use and ridesharing as a percent of their automobile use.

CRITERIA D-3

How do the alternatives compare in terms of their ability to improve bicycle, pedestrian and disabled access to and circulation within the waterfront while avoiding conflict with vehicular circulation?

Assumptions

All of the alternatives would share the benefits of improved pedestrian and bicycle access with the I-80 improvement package proposed by Caltrans. These improvements are noted below.

1. A separate bicycle, pedestrian pathway along West Frontage Road between Gilman Street and Powell Street.
2. The addition of bike lanes along Ashby Avenue and a separate pedestrian pathway on the Ashby Avenue overcrossing.

3. A separate two-way, ramped bicycle/pedestrian overcrossing connected to the new University Avenue overpass. This structure would replace the existing stairs and south sidewalk on the University Avenue overpass. These modifications would improve access for pedestrians, cyclists and the disabled.

A final element that all alternatives have in common is proposed as part of the Waterfront Plan. It is an exclusive bicycle/pedestrian overcrossing connecting Bancroft Way and Aquatic Park with the waterfront at the Brickyard. In each alternative, this overcrossing would complement the University Avenue bicycle/pedestrian overpass by providing a more direct connection for recreational riders between the Waterfront and West Berkeley.

General Evaluation

Each of the alternatives has an independent bicycle/pedestrian network developed in coordination with the proposed street network. The differences lie primarily in the potential for conflicts associated with the amount of vehicular traffic generated by each alternative and the degree to which auto and bus traffic dominate circulation within the waterfront.

Alternative 1

Alternative 1 has two distinct advantages with respect to minimizing vehicular/non-vehicular conflicts: it generates substantially less traffic than any of the other alternatives and it converts West Frontage Road, between University Avenue and Ashby Avenue, to an exclusive bicycle/pedestrian facility. As a result bicyclists and pedestrians would be able to travel between West Berkeley and the waterfront and within the waterfront with less competition from motorized vehicles.

The conversion of West Frontage Road to a bicycle/pedestrian facility does, however, eliminate vehicular access to part of the shoreline for the disabled and elderly.

Alternative 2

Development under Alternative 2 is concentrated around the Gilman Street interchange. The traffic generated at this location would increase the conflicts for bicyclists and pedestrians travelling on the bike lanes and sidewalks along Gilman Street between the waterfront and West Berkeley.

This alternative also converts West Frontage Road between University Avenue and Ashby Avenue to exclusive bicycle/pedestrian use presenting the same advantages and disadvantages as Alternative 1.

Alternative 3

This alternative provides an extensive bicycle/pedestrian system throughout the waterfront affording a high level of accessibility for the disabled. West

Frontage Road is maintained for vehicular access between University and Ashby, allowing continuous access to the bicycle/pedestrian path along the south shoreline.

The disadvantage of a scheme which provides a high level of accessibility for all modes of travel, is the potential increase in conflicts between autos/buses and pedestrians/bicyclists. With the increased traffic generated by the development, bicyclists and pedestrians would find it more difficult to negotiate through traffic to use the connections provided for them between the waterfront and West Berkeley at Gilman Street, University Avenue, and Ashby Avenue.

Alternative 4

Alternative 4 has the most extensive, exclusive bicycle/pedestrian network of all the alternatives and therefore offers a high degree of accessibility. The network is primarily required to support the higher level of development proposed, however, and therefore is serving a more functional purpose for circulation on the site and less of a recreational service.

The proposed intensity of development in this alternative could lead to a more active street life for the waterfront area, but it also increases the potential conflicts between autos and bicyclists and pedestrians both within and approaching the waterfront due to the magnitude of vehicular traffic generated by the alternative.

Refer to Conservation, Recreation, and Open Space section for additional evaluation of pedestrian/bicycle facilities.

CRITERIA D-5

How do the alternatives compare in terms of their demand for parking, and the amount of land devoted to it in any one location or within the waterfront as a whole?

Measurement Methodology

Parking Demand. The parking demand was estimated for each land use within each alternative based on the total number of parking spaces that would be required for each use if it were developed as an independent use. These rates were then adjusted to account for the unique characteristics of each waterfront development alternative, with an overall objective of trying to minimize the amount of parking devoted to each use and yet provide adequate parking on-site to avoid spillover parking effects.

The following assumptions were used in adjusting the parking demand rates:

1. A parking reduction for office use from 3.0 to 2.5 spaces/1,000 gsf was based on an assumed 35 percent reduction in auto trips through the implementation of TSM strategies. This assumption was based on the

Santa Fe proposal (Alternative 4) and was used as the ultimate parking provision rate for all office development. Such a reduction in parking demand is possible (Watergate Towers in Emeryville is currently operating at a parking demand of 2.85 spaces/1,000 gsf) if transit service is improved and rideshare programs are adopted./6/ The reduction in demand could be achieved, for example, if auto occupancy were increased to 1.4 persons per vehicle during the commute period and transit captured about 18 percent of the trips to the site.

In Alternatives 3 and 4 it was assumed that parking would initially be provided at a level of 3.0 spaces/1,000 gsf with some surface parking lots being converted to office space as development is phased in. As development becomes more dense and the potential for ridesharing and joint use of parking increase, the parking ratio would be reduced to 2.5 spaces/1,000 gsf.

2. A reduction in parking supply, as identified for independent uses, would be possible through the potential joint use of parking facilities. The opportunity for shared use of parking would be dependent upon the composition of uses in each alternative, the peak demand times for each use, and the proximity of uses with the potential for shared parking.
3. The parking rates identified for each of the use categories are intended as general guidelines to provide a relative comparison of the demand and adequacy of parking facilities for each alternative. As the land use components are defined more clearly for the preferred alternative, the parking demand can be identified more accurately and a more specific and responsive parking plan developed.
4. The 200 space commuter parking lot proposed at the Ashby Avenue interchange was not considered to be part of the waterfront parking supply. Such a lot could, however, potentially be used for recreational parking on the weekend.

Table D-9 summarizes the estimated parking demand ratios for each independent use and the amended ratio at which the parking was proposed for each alternative. To assess the relative adequacy of each scheme with respect to provision of parking, the total demand and total number of parking spaces was calculated for each alternative. The summary of these findings is presented in Table D-10.

General Evaluation

Each of the alternatives is proposing to provide parking within the range of 64 percent to 77 percent of their estimated demand. The adequacy of parking is therefore dependent upon the degree to which reduced demand for parking can be achieved through ridesharing and the extent to which parking can be shared between uses. Depending upon the location of uses, the new development could also potentially share the existing parking spaces at the waterfront where current utilization levels are low.

Alternative 1

This alternative would provide 77 percent of its estimated parking demand. This scheme could result in a shortfall of on-site parking during the weekends because all of the uses, with the possible exception of the conference center, have peak use periods on the weekends.

Alternative 2

Proposed parking facilities would satisfy 71 percent of the estimated demand. The peak use period for the hotel would occur during the late evening and night time, while the peak use period for the retail and the recreational uses would occur on weekend days. The reduction in parking for shared use is warranted, provided the parking spaces associated with the open space areas are close enough to the developed area to make shared parking feasible.

Alternative 3

Alternative 3 would provide 76 percent of its estimated parking demand. The broad range of uses proposed under this scheme would allow a potentially high degree of shared parking. Office parking demand peaks during the mid-day during the week, hotel peaks at night, and the retail and open space peaks would occur on weekend days. The conference center could peak either during the week or on the weekend depending on the nature of the facility. The large number of office spaces provided in this alternative would therefore be potentially available to offset the shortfall of parking for the other uses.

The adequacy of the office parking must also be considered independently. While office employees could potentially use the open space parking during the weekday as overflow, it may not be desirable to have the office parking spilling into the recreational areas. If the use of transit and ridesharing is increased to the site as previously identified, the proposed amount of office parking would be adequate to meet the reduced office demand.

The number of spaces allocated for residential use would generally be assumed to be designated for exclusive use of residents and guests to avoid the infiltration of non-residential traffic.

Alternative 4

This alternative would provide 64 percent of its estimated parking demand. The difference in times of peak use periods of the office, hotel, retail and open space would afford ample opportunities for the sharing of parking facilities. The greatest potential for a parking shortfall would occur on weekdays when office spaces would be at maximum use. If the conference center were marketed as a primarily weekend use facility, the shortfall would be minimized. However, the parking shortage would be acute if the conference center experienced peak use during the weekdays.

TABLE D-9:

PARKING DEMAND/SUPPLY RATIOS
FOR BERKELEY WATERFRONT ALTERNATIVES

| <u>Land Use</u> | <u>Parking Demand</u> | <u>Proposed Parking Supply Ratio</u> |
|------------------------------------|--------------------------------|---|
| Office/R & D | 3.0 spaces/1,000 gsf/a/ | 2.5 spaces/1,000 gsf |
| Hotel | 1.0 spaces/room/a/ | 0.8 spaces/room |
| Specialty Retail/ Comm. Rec. | 4.0 spaces/1,000 gsf/b/ | 2.5 spaces/1,000 gsf |
| Support Retail | 1.0 spaces/1,000 gsf/c/ | no independent parking facilities provided |
| Conference Center/ Cult. Center | 1.0 spaces/70 gsf/d/ | 1.0 spaces/165 gsf |
| Open Space | 4.6 spaces/acre/e/ | 4.6 spaces/acre |
| Residential | 1.5 spaces/dwelling unit/f/ | 1.5 spaces/dwelling unit |

/a/ Shared Parking, Urban Land Institute, 1983.

/b/ "Parking Requirements for Shopping Centers: Summary Recommendations and Research Study Report," Urban Land Institute, 1982.

/c/ Estimated parking/market demand for support retail in downtown Oakland based on recently published EIR's.

/d/ Estimate based on average code requirements for assembly halls, conference centers in Bay Area region.

/e/ Caltrans "8th Progress Report on Trip Ends Generation," July, 1973.

/f/ "Residential Parking Standards," S 81-403(ER 82-03), City of Oakland Planning Department, January 29, 1982.

TABLE D-10:

PARKING DEMAND AND SUPPLY FOR
BERKELEY WATERFRONT ALTERNATIVES

| <u>Use</u> | <u>Alt. 1/a/</u> | <u>Alt. 2</u> | <u>Alt. 3</u> | <u>Alt. 4</u> |
|------------------------------|------------------|---------------|---------------|---------------|
| Office/R & D | -- | -- | 3435/2865 | 9000/7500 |
| Hotel | -- | 650/ 520 | 550/ 440 | 1500/1200 |
| Support Retail | -- | -- | 20/ 0 | 60/ 0 |
| Spec. Retail/ Comm. Rec. | 760/ 475 | 400/ 250 | 60/ 40 | 560/ 50 |
| Conf. Center/ Cult. Cent. | 145/ 60 | 715/ 300 | 2140/ 910 | 2140/ 0 |
| Open Space | 720/ 720 | 570/ 570 | 445/ 445 | 375/ 0 |
| Residential | -- | -- | 1425/1425 | -- |
| TOTAL | 1625/1255 | 2335/1640 | 8075/6125 | 13675/8750 |

/a/ The first number in each column is the estimated parking demand for each individual use and the second number is the number of parking spaces proposed.

As in Alternative 3, the ability to reduce the office parking demand to 2.5 spaces/1,000 gsf would depend on the ability to achieve a reasonable transit share and high level of ridesharing activity.

Refer to Land Use, Community, and Visual Consideration section, Criteria 4 for additional evaluation of parking.

FOOTNOTES

- /1/ Source: Santa Fe's Concept for the Berkeley Waterfront Transportation Analysis, January 1985, Barton-Aschman Associates, Inc.
- /2/ Volumes reduced ten percent based on 10/83 Caltrans comparative analysis of Projections '79 versus Projections '83. Annual growth between 2005 and 2010 assumed to be one percent.
- /3/ Based on 1983 and 1984 field counts by DKS Associates.
- /4/ Letter from Santa Fe to ROMA dated January 31, 1985.
- /5/ Emeryville Bayfront Specific Plan, Report 1: Development Alternatives, Sedway Cooke Associates, January 10, 1985.
- /6/ "Preliminary Parking and Traffic Analysis, Watergate Office Towers," DKS Associates, April 27, 1984.

APPENDIX D-1

| Intersection | Project Mitigation |
|----------------------|--|
| Gilman at | |
| West Frontage Road | <ol style="list-style-type: none"> 1. 4 lane West Frontage Road with LTL * 2. 6 lane Gilman-West Frontage Road to I-80 NB ramps |
| I-80 NB Ramps | <ol style="list-style-type: none"> 1. 3 lane NB off ramp ** 2. 6 lane underpass |
| I-80 EB Ramps | <ol style="list-style-type: none"> 1. 3 lane EB off ramp 2. 6 lane underpass |
| San Pablo Avenue | None |
| University at | |
| West Frontage Road | <ol style="list-style-type: none"> 1. 4 lane West Frontage Road with dual leftturn lanes @ University 2. 3 EB and 3 NB lanes westerly from I-80 NB ramps |
| I-80 NB Ramps | <ol style="list-style-type: none"> 1. 2 lane NB off ramp |
| I-80 EB Ramps | <ol style="list-style-type: none"> 1. 3 lane EB off ramp 2. Dual left turn lanes on bridge for EB University to NB freeway (EB I-80) on ramp ** |
| Sixth Street | None |
| San Pablo Avenue | None |
| Ashby at | |
| Seventh Street | None |
| San Pablo Avenue | None |

* LTL = Left turn lane

** Mitigation not needed until Phase 2 of Berkeley Waterfront Project.

Source: Santa Fe's Concept for the Berkeley Waterfront Transportation Analysis, January 1985, Barton-Aschman Associates, Inc.

BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Utilities

Prepared by Wilson & Porter Engineering

E. UTILITIES

CRITERIA E-1

General Impacts and mitigation

Sanitary Sewer

Development of the site may impact existing sanitary sewer service to the Waterfront Area. The City has indicated the existing on site sewage collection network will not be available for use by new development of privately owned lands in the waterfront area. Therefore a new on site collection network will be necessary as part of any new development with the result that the existing on site system will not be impacted. However, East Bay Municipal Utility District's (EBMUD) main interceptor line which transports sewage from the waterfront area to the treatment plant at the eastern end of the Bay Bridge is currently flowing full with slight overflowing at several locations during periods of severe wet weather (five to six times a year). Added flows generated by development of the site could increase current overflowing at several locations including the treatment plant during these periods. However, it should be noted that even the most intense level of development evaluated would cause a minimal increase when compared to existing flows.

An inflow and infiltration study is currently being conducted to identify the sources of increased flows during wet weather. The study has identified a number of sources of wet weather inflow but is still in the process of developing means to correct problems. If corrected, the system could accommodate virtually any level of development on site during wet weather without having to operate even close to capacity. However, the system may never be entirely rehabilitated due to cost. An estimate of the decrease in wet weather flows which can be expected is not possible at this time due to the final results of the inflow and infiltration study not being available and corrective measures with implementation policies not being adopted. Construction of future development in the City of Albany will also influence capacity in EBMUD's interceptor available for development of the waterfront area.

EBMUD's primary means of controlling flows into the interceptor is by limiting new connections. An existing 16 inch connection currently provides service to the waterfront area and is utilized primarily by existing development in the marina area. The City has indicated that the remaining capacity of the 16 inch line, 1.9 cubic feet per second, may be available for use by future private development in the waterfront area. Once this capacity is used, a second line will have to be extended under the freeway to the interceptor. EBMUD Staff is currently drafting a set of policies with regard to new connections to be presented to the Board of Directors for action. Until the Board reviews and acts upon these policies no definitive ruling will be possible concerning new connections.

Water

To be included when necessary information from EBMUD becomes available.

Gas Service

Development of the Berkeley Waterfront Area assuming any of the proposed alternatives would not have a significant impact on gas service to the area. PG & E has indicated their existing facilities are probably adequate to accommodate any of the proposed alternatives without significant offsite improvements. The existing system providing service to the waterfront area has sufficient capacity to support most any type of development exclusive of gas intense industrial development. On site improvements in terms of an on site distribution system to support any new development will be required. However, no significant impacts are anticipated.

PG & E has stated they will provide required gas service to the area regardless of the type or intensity of development

Electric Service

Electric service to the waterfront area is also provided by PG & E. PG & E has indicated the existing service to the area is sufficient to support Alternatives 1 and 2 and probably Phase 1 of Alternative 3. Additional off site improvements will probably be required to provide service for Phase 2 of Alternative 3 and Alternative 4. However, PG & E has stated that they will complete all off site improvements necessary to provide adequate service to the site regardless of the type or intensity of development as required by the Public Utilities Commission (PUC). PG & E's primary concern is that they have sufficient lead time, once a formal development plan is selected and final designs are submitted, to complete required improvements.

Telephone Service

It is not anticipated that any of the proposed alternatives would have a negative impact on the existing telephone network in the surrounding area. Existing facilities in the waterfront area are expected to be sufficient to support any of the proposed alternatives. However, if not, PT & T would reinforce the existing system as necessary in accordance with the requirements of the PUC.

The developer may be responsible for trenching and the placement of conduit for distributing service throughout the site dependent upon whether service is placed in public rights of way.

Storm Drainage

Development of the Berkeley Waterfront Area assuming any of the proposed alternatives would not have a negative impact, provided the storm drainage facilities are designed properly. It is anticipated that the system will be primarily surface drainage with a subsurface collection system for developed areas and roadways emptying into the Bay. Provided the system is adequately designed and maintained and no pollutants are collected in the system, it should not have a significant adverse impact on the surrounding environment. However, a key design factor of the drainage system for all alternatives will be outfalls. They must be designed to protect against erosion while providing adequate drainage.

Alternative 1

Sewer

Alternative 1 would have the least impact on the existing sanitary sewer network due to the limited amount of development proposed. Review of Table V.E.1 will indicate preliminary estimates show Alternative 1 will generate approximately (x) cubic feet of sanitary sewage during the peak period. If the existing 16 inch line extending under the freeway from the waterfront area to EBMUD's interceptor can be utilized, it would have sufficient capacity to accommodate the anticipated flows from both the existing development in the marina area and the proposed development. However, based on the City's stated requirement, a new network would have to be constructed to collect the sewage and transport it to the 16 inch line just west of the freeway.

Water

To be included when necessary information from EBMUD becomes available.

Alternative 2

Sewer

Alternative 2 is expected to generate more sewage than Alternative 1 as indicated by the preliminary estimates in Table V.E.1. Review of this table will indicate that Alternative 2 is expected to generate approximately y cubic feet of sewage per second. Again an on site collection network would have to be constructed as part of the development. However, the existing 16 inch line under the freeway may have sufficient capacity to accommodate the anticipated flow from both the existing development in the marina and the proposed development.

Water Service

To be included when necessary information from EBMUD becomes available.

Alternative 3

Sewer

Review of Table V.E.1 will indicate that Alternative 3 is estimated to generate approximately (z) cubic feet of sanitary sewage per second. Again a complete new onsite collection network will need to be constructed. By Phase two of Alternative 3 the existing 16 inch connection to EBMUD's interceptor may not have sufficient capacity to accomodate both flows from the existing development at the marina and the proposed development. Dependent upon the actual type of development and anticipated use another connection to EBMUD's interceptor may be required in the form of another line under the freeway. Use of on site holding tanks and discharging into EBMUD's interceptor during the off peak hours (2 - 6 a.m.) may also alleviate the need for a second connection. Further study is required to determine the potential effectiveness of the use of holding tanks.

Water Service

To be included when necessary information from EBMUD becomes available.

Alternative 4

Sewer

Review of Table V.E.1 will show preliminary estimates indicate Alternative 4 will generate approximately (a) cubic feet per second of sewage during the peak period. As in Alternative 3 a new on site collection network will have to be constructed and by Phase 2 a second connection extending under the freeway to EBMUD's interceptor may be required dependent upon the type of development, anticipated use and the use of holding tanks.

Water Service

To be included when necessary information from EBMUD becomes available.

Gas Service

BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Economic Development

Prepared by McGuire & Company

F. ECONOMIC DEVELOPMENT:
EMPLOYMENT, FISCAL IMPLICATIONS, MARKET CONSIDERATIONS

INTRODUCTION

The economic development aspects of the four alternatives were analyzed in accordance with the following criteria concerning how the alternatives compare:

1. In enhancing the strength and diversity of Berkeley's economy?
2. In creating new businesses and employment opportunities for Berkeley residents?
3. In generating construction and permanent jobs which meet the needs of Berkeley's unemployed and underemployed population and providing opportunities for job mobility?
4. In generating revenues which exceed municipal service costs over the long term to make possible other city objectives such as housing, recreation, or cultural, either on or off-site?
5. In creating water-related job and business opportunities which cannot be easily be created elsewhere in the city and region?
6. In creating business opportunities which will not adversely affect those found in other economic centers within Berkeley, such as the Downtown and South Berkeley?
7. In creating opportunities for advancement of Berkeley's Affirmative Action policies?
8. In providing goods and services that complement or reinforce other land uses in the water front area?

Each of the alternatives provides economic development opportunities through jobs and business development. Each alternative also provides a net revenue stream to the city after subtracting municipal costs. However, each varies in the amounts of economic opportunity and net revenues.

The following table summarizes the alternatives in terms of how each meets the specific criteria.

TABLE V.F.-1: SUMMARY EVALUATION

| CRITERION | ALT 1 | ALT 2 | ALT 3 | ALT 4 |
|-----------|-------|-------|-------|-------|
| 1 | - | X | + | ++ |
| 2 | X | X | - | X |
| 3 | -- | X | + | ++ |
| 4 | -- | X | X | ++ |
| 5 | - | - | - | - |
| 6 | - | X | X | X |
| 7 | X | X | + | ++ |
| 8 | X | X | ++ | X |

KEY

- ++ most fulfills criterion
- + more than fulfills criterion
- x meets but does not exceed criterion
- does not fulfill criterion
- least fulfills criterion
- +/- fulfills one part or measure of a criterion but fails to meet another aspect

DETAILED EVALUATIONS

Each of the four alternatives has been evaluated using the adopted set of criteria and a set of measures appropriate to each criterion. Each measure was weighted with the following scale:

- ** = significantly positive impact
- * = noticeable positive impact
- 0 = slight or neutral impact
- * = noticeable negative impact
- ** = significantly negative impact

CRITERION

1. In enhancing the strength and diversity of Berkeley's economy?

MEASURES

1. Number of additional employees added to Berkeley's employment base.
2. Amount of retail sales.
3. Number of additional hotel rooms to add to Berkeley's lodging Industry base.
4. Ability to support a variety of local businesses off site.

DISCUSSION

Berkeley's employment base in 1980 was 58,848 jobs, distributed as follows:

| <u>Activity</u> | <u>Number</u> | <u>Percent</u> |
|--------------------|---------------|----------------|
| Agriculture/mining | 232 | 0.0 |
| Manufacturing | 9,777 | 16.9 |
| Retail | 9,528 | 16.2 |
| Services | 29,003 | 49.3 |
| Other | 10,308 | 17.5 |
| Total | 58,848 | 100.0 |

Each alternative provides additional employment which would strengthen the city's employment base. However, the overall employment effects are in direct proportion to the intensity of development and level of investment.

Alternatives 1 and 2 increase the total number of jobs by approximately one percent over the 1980 employment base. Alternatives 3 and 4 increase the employment base by 6.1 and 18.0 percent respectively.

RETAIL SALES

In 1982 Berkeley had retail sales of 591 million dollars. Based on the proposed amounts of retail space in each alternative, the following amount of sales would be generated by each alternative (assuming \$175 per square foot of retail sales per year).

| | <u>Retail Sales (000)</u> | <u>% Berkeley Total Sales</u> |
|---------------|-------------------------------|-----------------------------------|
| Alternative 1 | 35,000,000 | 5.9 |
| Alternative 2 | 19,250,000 | 3.2 |
| Alternative 3 | 6,125,000 | 1.0 |
| Alternative 4 | 26,250,000 | 4.4 |

HOTEL ROOMS

The alternatives contain the following number of hotel rooms:

| | |
|---------------|-------|
| Alternative 1 | 0 |
| Alternative 2 | 650 |
| Alternative 3 | 550 |
| Alternative 4 | 1,500 |

For comparison, in 1985 Berkeley has approximately 997 hotel rooms (including the Claremont).

SUPPORTING OFF-SITE BUSINESSES

Off-site business stimulation would include such categories as: printing and related, office supplies and furniture, food services such as restaurants and catering, laundry, automobile services and entertainment related. Activities such as printing and office repair would not be located on site, but off site in the area east of the freeway, where a certain amount of such activities already occurs.

Offices and hotels would provide the largest market for such established Berkeley activities such as its prominent restaurant base.

EVALUATION MATRIX

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|--------------------------------|--------------|--------------|--------------|--------------|
| 1. Strengthen employment base | * | * | ** | ** |
| 2. Add to retail sales | * | 0 | 0 | * |
| 3. Strengthen lodging base | 0 | * | * | ** |
| 4. Support off-site businesses | 0 | * | * | ** |

CRITERION

2. In creating new business and employment opportunities for Berkeley residents?

MEASURES

1. Office job opportunities.
2. Hotel and retail jobs.
3. Number of retail opportunities.
4. Number of hotel related business opportunities.

DISCUSSION

New business opportunities on the site are related to the amount of retail space and hotel rooms provided. These are the most likely

opportunities for new business ventures. However, there is no guarantee that the various businesses on the site would be run by Berkeley residents. It is possible to consider that some kinds of incentives could be written into a development agreement which would provide a preference for Berkeley residents.

| <u>Business Opportunities</u> | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|--|--------------|--------------|--------------|--------------|
| retail (stores, shops, restaurants, etc.) | 50-75 | 25-40 | 10-15 | 40-60 |
| hotel related (food related, assorted shops, etc) | 0 | 6-10 | 6-10 | 15-20 |

The above figures represent estimates of the number of retail, food service, and other miscellaneous businesses which would likely be developed at the site. (These estimates are subjective, but based on analogous hotel and retail development patterns.) There is considerable variation in the size of shops and restaurants. In a shopping center, for example, retail spaces for small businesses run from 1,000 square feet (as in Jack London Village) to 4,000 square feet (in Larkspur Landing.)

In terms of jobs, there is again no guarantee that the jobs would go to Berkeley residents. However, at present half of Berkeley's residents work in and around Berkeley, and it is likely that over time this pattern would prevail for jobs on the waterfront, as people would rather be near their place of employment. Entry level jobs, and jobs in the service sector would more than likely be assumed by persons living in the area, rather than long distance commuters.

EVALUATION MATRIX

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|------------------------------------|--------------|--------------|--------------|--------------|
| 1. Office jobs | 0 | 0 | * | ** |
| 2. Hotel and retail jobs | * | * | * | ** |
| 3. Open Space related | 0 | 0 | 0 | 0 |
| 4. Retail opportunities | * | * | 0 | * |
| 5. Hotel business opportunities | 0 | * | * | ** |

CRITERION

3. In generating construction and permanent jobs which meet the needs of Berkeley's unemployed and underemployed population and providing opportunities for job mobility?

MEASURES

1. Number of managerial and technical jobs.
2. Number of clerical jobs.
3. Number of sales jobs.
4. Number of service sector jobs.
5. Number of temporary construction jobs.

DISCUSSION

Table 2 summarizes the job potential for each alternative, by the total number of jobs and by job classification.

The number of jobs is related directly to the amount of development, especially office development. One important caveat is in order, however, when assessing the local employment potential of office jobs. Most of the new office space would be occupied by existing businesses who already have their employees, who may not live in the Berkeley area.

Office employment opportunities for local residents would most likely come from the normal employment turnover and business growth. Approximately 10 percent of the office employees would turn over each year, and this 10 percent is the more relevant target for local employment. Half of that 10 percent, or 5 percent would most likely be in the non technical or non managerial ranks, and better suited to alleviating unemployment and underemployment.

Hotel and retail related jobs would more likely be in new establishments, requiring new hires. These businesses also have a higher component of entry level jobs.

The number of construction jobs is directly related to the dollar value of the amount of construction proposed in each Alternative.

JOB MOBILITY

Jobs in the hotel and retail sectors offer little job upward mobility, since they are mostly entry level jobs. However, these jobs are good targets for the unemployed or underemployed. The technical and managerial jobs offer the most upward mobility potential, but achieving this potential is difficult under any circumstances. Yet the jobs must at least theoretically be within reach for any mobility to occur.

EVALUATION MATRIX

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|------------------------------|--------------|--------------|--------------|--------------|
| 1. Management/Tech. jobs | 0 | 0 | * | * |
| 2. Clerical jobs | 0 | 0 | ** | ** |
| 3. Sales jobs | * | * | * | * |
| 4. Service jobs | 0 | * | * | * |
| 5. Potential upward mobility | 0 | 0 | * | * |

TABLE V.7 -2: ANALYSIS OF JOBS BY TYPE AND ALTERNATIVE

| | #1 | #2 | #3 | #4 |
|------------------------|---------|---------|---------|-----------|
| Office Space (sq. ft.) | 0 | 0 | 845,000 | 2,484,000 |
| No. of Employees | 0 | 0 | 3,042 | 8,942 |
| Professional/Technical | | 0 | 1,034 | 3,040 |
| Managerial/Admin. | | 0 | 808 | 1,788 |
| Clerical | | 0 | 1,128 | 3,309 |
| Sales | | 0 | 91 | 268 |
| Service | | 0 | 30 | 88 |
| Crafts, etc. | | 0 | 152 | 447 |
| Total | 0 | 0 | 3,042 | 8,942 |
| Hotels | 0 | | | |
| Number of Rooms | 0 | 850 | 550 | 1,500 |
| Prof/Tech | | 18 | 15 | 42 |
| Mgr/Admin | | 14 | 12 | 32 |
| Clerical | | 8 | 8 | 21 |
| Service | | 414 | 350 | 956 |
| Total | 0 | 455 | 385 | 1,050 |
| Retail | | | | |
| Number of Square Feet | 200,000 | 110,000 | 35,000 | 150,000 |
| Prof/Mgat | 60 | 33 | 11 | 45 |
| Sales | 240 | 132 | 42 | 180 |
| Service | 300 | 165 | 53 | 225 |
| Total | 600 | 330 | 105 | 450 |
| Summary | | | | |
| Prof/Tech/Mgr/Admin | 80 | 65 | 1,680 | 4,947 |
| Clerical | 0 | 8 | 1,133 | 3,330 |
| Sales | 240 | 132 | 133 | 448 |
| Service/Maintenance | 300 | 578 | 585 | 1,717 |
| Open Space | 20 | 18 | 12 | 10 |
| Total Permanent Jobs | 600 | 785 | 3,532 | 10,442 |
| Construction | | | | |
| Temporary Jobs | 158 | 531 | 2,040 | 3,275 |

CRITERION

4. In generating revenues which exceed municipal service costs over the long term to make possible other city objectives such as housing, recreation or cultural, either on or off site?

MEASURES

1. Net revenues (revenues minus costs).
2. Revenue per unit of development.

DISCUSSION

Table 3 illustrates the fiscal implications of each alternative. Each alternative provides revenues to the city and each in turn has its own associated costs.

Among the alternatives the ability to generate tax and other revenues is directly related to the amount of investment in hotels and office buildings. The site is presently served by the full array of municipal services, and additional development would require an extension of these services.

Revenue by land use is an important consideration, as the revenue derived for each use differs substantially. For example, a 1,000 square foot increment of development generates the following revenues:

TABLE V.F. -4: REVENUE PER 1,000 SQFT INCREMENT

| | Property Tax | Sales Tax | Occupancy Tax | Utility Fee | Business License | Total |
|---------|-----------------|--------------|------------------|----------------|---------------------|---------|
| Hotel | \$670 | \$ 68 | \$3,489 | \$75 | \$ - | \$4,302 |
| Office | 670 | - | - | 75 | 200 | 945 |
| Retail | 670 | 1,750 | - | 75 | 165 | 2,660 |
| Housing | 670 | - | - | 75 | - | 745 |

An additional measure of revenue is net revenue (revenue minus costs) per \$1,000 increment of development for each alternative. Since the alternatives contain different mixtures of activities, the amount of revenue generated to the city per unit of development is different in each alternative.

TABLE V.F.-8: FISCAL ANALYSIS OF ALTERNATIVES

| SUMMARIES | ALTERNATIVE ONE | | | | ALTERNATIVE TWO | | | | ALTERNATIVE THREE | | | | ALTERNATIVE FOUR | | | |
|-------------------|-----------------|------------|------------|------------|-----------------|------|------------|------------|-------------------|------------|-------------|-------------|------------------|-------------|-------------|-------------|
| | 1990 | 1995 | 2000 | 2005 | 1990 | 1995 | 2000 | 2005 | 1990 | 1995 | 2000 | 2005 | 1990 | 1995 | 2000 | 2005 |
| DEVELOPMENT | | | | | | | | | | | | | | | | |
| HOTEL ROOMS | 0 | 0 | 0 | 0 | 0 | 0 | 350 | 850 | 550 | 550 | 550 | 550 | 950 | 1,500 | 1,500 | 1,500 |
| OFFICE SPACE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 425,000 | 845,000 | 285,000 | 885,000 | 1,584,000 | 2,484,000 |
| RETAIL SPACE | 50,000 | 200,000 | 200,000 | 200,000 | 0 | 0 | 54,000 | 110,000 | 35,000 | 35,000 | 35,000 | 35,000 | 50,000 | 150,000 | 150,000 | 150,000 |
| HOUSING UNITS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 290 | 840 | 950 | 0 | 0 | 0 | 0 |
| PARKING STRUCT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 850 | 1,912 | 2,952 | 2,882 | 4,114 | 5,925 | 8,358 |
| LANDSCAPED AREAS | 375,290 | 375,290 | 375,290 | 375,290 | 0 | | 182,925 | 339,755 | 509,680 | 705,655 | 1,087,720 | 1,411,352 | 432,430 | 682,430 | 850,605 | 1,125,505 |
| INVESTMENT | | | | | | | | | | | | | | | | |
| HOTELS | 0 | 0 | 0 | 0 | 0 | 0 | 25,705,383 | 47,740,388 | 47,334,380 | 47,334,380 | 47,334,380 | 47,334,380 | 75,975,830 | 115,842,800 | 115,842,800 | 115,842,800 |
| OFFICE BLDGS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32,512,500 | 64,642,500 | 20,721,300 | 63,741,300 | 113,572,800 | 172,365,800 |
| RETAIL | 18,730,000 | 18,730,000 | 18,730,000 | 18,730,000 | 0 | 0 | 4,582,700 | 8,355,500 | 3,123,750 | 3,123,750 | 3,123,750 | 3,123,750 | 4,182,500 | 12,547,500 | 12,547,500 | 12,547,500 |
| HOUSING | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15,338,800 | 40,471,880 | 80,075,150 | 0 | 0 | 0 | 0 |
| PARK STRUCTURES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,134,750 | 8,888,125 | 19,385,120 | 31,300,890 | 25,129,340 | 39,727,780 | 55,184,950 | 82,025,920 |
| SITE IMPROVEMENTS | 2,181,707 | 2,181,707 | 2,181,707 | 2,181,707 | 0 | | 3,364,585 | 8,655,854 | 4,022,785 | 4,901,240 | 7,711,062 | 10,004,820 | 2,271,534 | 4,430,044 | 5,343,240 | 7,225,848 |
| TOTAL INVESTMENT | 18,911,707 | 18,911,707 | 18,911,707 | 18,911,707 | 0 | 0 | 33,653,661 | 63,751,542 | 55,515,655 | 62,365,095 | 150,535,482 | 215,481,590 | 132,280,704 | 239,285,424 | 305,480,700 | 395,014,365 |
| EMPLOYMENT | | | | | 0 | | | | | | | | | | | |
| OFFICE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,530 | 3,042 | 1,040 | 3,200 | 5,702 | 8,942 |
| HOTEL | 0 | 0 | 0 | 0 | 0 | 0 | 245 | 455 | 385 | 385 | 385 | 385 | 855 | 1,050 | 1,050 | 1,050 |
| RETAIL | 150 | 800 | 800 | 800 | 0 | 0 | 182 | 330 | 105 | 105 | 105 | 105 | 150 | 450 | 450 | 450 |
| TOTAL EMPLOYMENT | 150 | 800 | 800 | 800 | 0 | 0 | 407 | 785 | 490 | 490 | 2,020 | 3,532 | 1,855 | 4,700 | 7,202 | 10,442 |
| FISCAL REVENUE | | | | | | | | | | | | | | | | |
| PROPERTY TAX | 125,705 | 125,705 | 125,705 | 125,705 | 0 | | 225,547 | 427,135 | 372,825 | 552,000 | 1,005,815 | 1,450,427 | 885,281 | 1,803,235 | 2,053,455 | 2,533,155 |
| HOTEL OCCUPANCY | 0 | 0 | 0 | 0 | 0 | | 783,800 | 1,474,200 | 1,247,400 | 1,247,400 | 1,247,400 | 1,247,400 | 2,154,800 | 3,402,000 | 3,402,000 | 3,402,000 |
| SALES TAX | 57,500 | 350,000 | 350,000 | 350,000 | 0 | | 84,500 | 182,500 | 81,250 | 81,250 | 81,250 | 81,250 | 87,500 | 282,500 | 282,500 | 282,500 |
| SALES TAX - HOTEL | 0 | 0 | 0 | 0 | 0 | | 22,680 | 42,120 | 35,640 | 35,640 | 35,640 | 35,640 | 81,580 | 87,200 | 87,200 | 87,200 |
| UTILITY USERS | 30,000 | 30,000 | 30,000 | 30,000 | 0 | | 31,888 | 84,000 | 32,053 | 32,084 | 32,144 | 32,155 | 53,813 | 95,825 | 95,825 | 95,825 |
| BUSINESS LICENSE | 32,800 | 32,800 | 32,800 | 32,800 | | | 11,515 | 21,385 | 4,835 | 4,835 | 76,845 | 147,909 | 52,557 | 181,807 | 322,467 | 467,827 |
| TOTAL REVENUE | 277,105 | 538,505 | 538,505 | 538,505 | 0 | | 1,175,730 | 2,221,340 | 1,753,913 | 1,833,305 | 2,451,894 | 2,874,784 | 3,305,311 | 5,552,471 | 6,233,280 | 8,955,145 |
| FISCAL COSTS | | | | | | | | | | | | | | | | |
| POLICE | 55,000 | 110,000 | 110,000 | 110,000 | 0 | 0 | 110,000 | 220,000 | 231,000 | 231,000 | 452,000 | 452,000 | 273,000 | 273,000 | 546,000 | 819,000 |
| FIRE | 55,000 | 110,000 | 110,000 | 110,000 | 0 | 0 | 110,000 | 220,000 | 220,000 | 495,000 | 550,000 | 550,000 | 185,000 | 550,000 | 550,000 | 550,000 |
| ADMINISTRATIVE | 0 | 0 | 0 | 0 | 0 | 0 | 50,000 | 50,000 | 100,000 | 150,000 | 150,000 | 150,000 | 150,000 | 200,000 | 250,000 | 250,000 |
| MAINTENANCE | 50,000 | 50,000 | 50,000 | 50,000 | 0 | 0 | 100,000 | 100,000 | 110,000 | 110,000 | 110,000 | 110,000 | 110,000 | 220,000 | 330,000 | 330,000 |
| AMORT NEW FACILIT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 204,000 | 204,000 | 204,000 | 0 | 0 | 204,000 | 204,000 |
| TOTAL COSTS | 160,000 | 270,000 | 270,000 | 270,000 | 0 | | 370,000 | 590,000 | 661,000 | 1,190,000 | 1,475,000 | 1,475,000 | 728,000 | 1,343,000 | 1,880,000 | 2,253,000 |
| NET REVENUES | 117,105 | 268,505 | 268,505 | 268,505 | 0 | | 805,730 | 1,631,340 | 1,092,913 | 743,305 | 985,894 | 1,409,784 | 2,577,311 | 4,309,471 | 4,253,280 | 4,705,145 |

Net Revenue per \$1,000 Investment Increment

| | |
|---------------|---------|
| Alternative 1 | \$14.25 |
| Alternative 2 | 25.58 |
| Alternative 3 | 6.90 |
| Alternative 4 | 11.97 |

EVALUATION MATRIX

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|------------------------------------|--------------|--------------|--------------|--------------|
| 1. Net Revenue | 0 | * | * | ** |
| 2. Revenue per \$1,000 Invested | * | ** | 0 | * |

NOTES TO FISCAL ANALYSIS

1. Development.

All figures under the Development heading are the cumulative totals of the amounts of development in place at the end of that year.

Office space, retail space and landscaped areas are in square feet of development. Hotel rooms, and housing units are in the number of such units. Parking structures refers to the number of parking spaces in covered structures, not surface parking. Surface parking is covered under landscaped areas.

2. Investment.

All figures in the Investment section are the dollar amounts of construction, including hard costs and soft costs. The figures do not include a component for the value of the land. All figures are in current 1985 dollars and are based on costs as of April 1985. Inflation has not been factored into any of these figures.

3. Employment.

Employment figures are based on:

- Office employment as one employee per 275 square feet
- Retail employment as three employees per 1,000 square feet
- Hotel employment as 0.7 employee per room

4. Fiscal Revenue.

Property tax is based on Berkeley's effective rate of .0067, composed of 40 percent of the county .01 levy, and the various city overrides. The tax rate is applied to the value of development reported in the Investment section of the table. It does not include a land value, as such is unknown at this time. Therefore, the total property tax could be higher, depending on how the County Assessor ultimately values the land.

Hotel occupancy tax is based on ten percent of the room gross, based on a 70 percent occupancy rate.

Sales tax is one percent of sales and assumes retail sales of \$175 per square foot of retail space. Hotel sales subject to the sales tax is estimated at 20 percent of the room revenue.

Utility users tax is based on an annual cost factor of \$1.50 per square foot per year utility cost, times the tax rate of five percent.

Business license tax is based on anticipated gross receipts of \$50,000 per employee, times the rate of .00094.

5. Fiscal Costs.

Police and Fire Protection have an average annual cost (fully loaded) of \$55,000 per person. It is anticipated that as development occurs the requirements for police and fire protection will gradually increase with the pace of development. At some point new beats will be required. A beat consists of 4.2 officers. Alternative 3 will ultimately require two new beats, and Alternative 4, three new beats.

At some time (in Phase II) it will be necessary to build a fire station at the site, which would cost \$2,000,000 (in 1985 dollars) and require 10 to 12 firemen.

Some additional Administrative time will be required by the development, depending on the level of development. Administrative services would include legal, inspections, compliance, planning, maintenance supervision and general administration from the Manager's office. These are only roughly estimated at this time.

Maintenance would be required for roads, sidewalks and utilities which would have been dedicated to the city. New facilities should not require much attention, but in time there would be some added expense for maintenance.

Amortization expense is for the new fire station, assuming an eight percent rate over 20 years.

6. Net revenues are the difference between the total revenues from all sources, and the total costs.

CRITERION

5. In creating water-related job and business opportunities which cannot be easily created elsewhere in the city and region?

MEASURES

1. Direct water access required.
2. Water related industry support.
3. Water related in some way.

Direct water access is required for such things as marinas, ferry terminals and fishing. Water Industry support would be such activities as warehousing or marine repair. Water Industry related could be a broad category such as a chandlery or fish market.

Although each development alternative would undoubtedly exploit its location on the water, that does not mean they are meeting the criteria.

EVALUATION MATRIX

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|------------------------|--------------|--------------|--------------|--------------|
| Direct access required | 0 | 0 | 0 | 0 |
| Water industry support | 0 | 0 | 0 | 0 |
| Water related | 0 | 0 | 0 | 0 |

CRITERION

6. In creating business opportunities which will not adversely affect those found in other economic centers within Berkeley, such as the Downtown and South Berkeley?

MEASURES

1. Office vacancy rate.
2. Level of Office rents.
3. Volume of retail sales.
4. Hotel occupancy.
5. Housing prices and rents.

DISCUSSION

Whether or not development on the waterfront is competitive or complementary with development elsewhere in the city depends on how the downtown and other areas evolve. For example, there are two alternative scenarios for the evolution of downtown: modified status quo or development as a major office and retail center (on the model of Walnut Creek). The impact of waterfront development would depend on which is the most realistic scenario for downtown Berkeley.

Modified status quo would imply some modest increases in office space and retail stores, on the order of, say, 20 percent over and above what exists now. Development into a major commercial center would require at least doubling the office space and shopping. For example, there is approximately 650,000 square feet of office space in downtown Berkeley in major office buildings. The Golden Bear project will add an additional 225,000 square feet, bringing the total to approximately 875,000 square feet.

Adding one million square feet of office space to downtown would mean almost five more Golden Bear projects. The likelihood of that happening within the next 20 years is not likely. Therefore, the most realistic scenario is incremental development of downtown with some modifications of the status quo.

If, on the other hand, downtown Berkeley's future lay in becoming a large commercial center, then development on the waterfront could foreclose some opportunities to develop there. Then the level of development represented by the alternatives would be extremely important in assessing this criterion.

EVALUATION MATRIX

Scenario 1 -- Modified Status Quo

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|---------------------|--------------|--------------|--------------|--------------|
| 1. Office vacancies | 0 | 0 | 0 | 0 |
| 2. Office rents | 0 | 0 | 0 | —* |
| 3. Retail sales | 0 | 0 | * | * |
| 4. Hotel occupancy | 0 | 0 | —* | —* |

Scenario 2 -- Downtown as Major Regional Center

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|----------------------|--------------|--------------|--------------|--------------|
| 1. Office vacancies. | 0 | 0 | 0 | —* |
| 2. Office rents. | 0 | 0 | 0 | —* |
| 3. Retail sales. | 0 | 0 | * | * |
| 4. Hotel occupancy | 0 | 0 | 0 | —* |

WEST BERKELEY

MEASURES

1. Amount of Induced general commercial and industrial development.
2. Amount of Induced commercial development serving the waterfront.
3. Affect on raising housing prices and rents.
4. Affects on raising industrial values.

DISCUSSION

Development at the waterfront may induce development in West Berkeley and adjacent neighborhoods. For example, support activities for the offices, hotels and restaurants would likely be located across the freeway in proximity to the site. This would certainly be good for those businesses involved, and would generate revenue to the city. The possible down side is that it would increase demand for property in the area, with the side effect of raising rents and values for residential and commercial properties.

Each of the alternatives significantly improves the waterfront area. Thus there are bound to be spillover effects on the adjacent neighborhoods, regardless of the alternative. An improved waterfront

will likely make West Berkeley and adjacent neighborhoods more desirable places to live or do business. This would lead to upward pressures on property values and rents. The amount of the spillover impact is not necessarily related to the intensity of development. For example, a high quality low density development would likely have positive spillover in the neighborhoods, making them more desirable places to live, hence increasing prices and rents. To illustrate, everybody likes to live by the park, rather than by offices and stores.

EVALUATION MATRIX

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|-------------------------|--------------|--------------|--------------|--------------|
| 1. Induced development | 0 | * | ** | ** |
| 2. Commercial values | 0 | * | ** | ** |
| 3. Housing prices/rents | * | * | ** | ** |

CRITERION

7. In creating opportunities for advancement of Berkeley's Affirmative Action policies?

MEASURES

1. Number of entry level jobs.
2. Percentage of entry level jobs.
3. Amount of retail space.
4. Number of hotel rooms.

DISCUSSION

Affirmative action opportunities relating to jobs for minorities and women and opportunities for small disadvantaged businesses are dependent on the scale and kind of development.

The more jobs available, the larger is the potential pool of jobs for minorities and women. For entry level jobs, the hotels, restaurants and retail shops provide the most direct opportunities.

Minority and women business opportunities at the site are dependent on the total number of such opportunities in each Alternative. The more possible business opportunities, the greater is the potential of capturing some of these opportunities for women and minorities (all other things being equal.)

EVALUATION MATRIX

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|--------------------------|--------------|--------------|--------------|--------------|
| 1. Entry level jobs | * | * | * | ** |
| 2. % entry level | ** | ** | * | ** |
| 3. Amount retail space | * | * | 0 | * |
| 4. Number of hotel rooms | 0 | * | * | ** |

CRITERION

8. In providing goods and services that complement or reinforce other land uses in the waterfront area?

MEASURES

1. Providing sources of additional patronage.
2. Enhancing security.
3. Attracting visitors.

DISCUSSION

Current uses at the waterfront are recreation oriented. Complementing these uses would require such things as: (1) improving the open space environment, (2) providing patronage to the existing restaurants, and (3) strengthening the attraction of the waterfront as a place to visit.

Alternative 3, it should be noted, provides housing giving the area a permanent population which serves to increase demand and provide a 24 hour environment.

EVALUATION MATRIX

| | <u>Alt 1</u> | <u>Alt 2</u> | <u>Alt 3</u> | <u>Alt 4</u> |
|----------------------|--------------|--------------|--------------|--------------|
| 1. Provide patronage | 0 | 0 | ** | ** |
| 2. Enhance security | 0 | 0 | ** | 0 |
| 3. Attract visitors | * | ** | ** | ** |

BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Demographics and Housing

Prepared by Planning Analysis & Development

G. DEMOGRAPHICS AND HOUSING

Criterion G.1

How do the alternatives compare in the kind of housing that could be provided on or off-site, and who would it serve?

On-site Housing

Only Alternative 3 would involve housing on the site. Of the 950 units, 290 would be built in phase one and 660 would be built in phase two. Whom the housing would serve depends on housing prices, unit size and occupancy tenure. Assuming residential development on the site is similar to other market rate waterfront housing such as Harbor Bay Isle, the units would probably be studios, one-bedroom and two bedroom condominiums. Assuming the mix of units is similar to the existing housing mix in Berkeley, there would be 104 studios, 418 one-bedrooms and 428 two-bedrooms. Units would be priced as shown in Table V.G.1.

TABLE V.G.1: WATERFRONT HOUSING PRICES - 1985 DOLLARS

| <u>Unit Size</u> | <u>Price Range</u> | <u>Amount</u> | <u>Percent</u> |
|------------------|-----------------------|---------------|----------------|
| Studios | \$80,000 - \$90,000 | 104 | 11 |
| One-Bedrooms | \$100,000 - \$110,000 | 418 | 44 |
| Two-Bedrooms | \$110,000 - \$125,000 | 428 | 45 |
| TOTAL | | 950 | 100% |

Source: Chet McGuire/McGuire & Company

These prices are higher than prices of similarly sized existing housing in Berkeley. Table V.G.2 shows the following housing prices and market activity in Berkeley between March 1983 and March 1984.

TABLE V.G.2: HOUSING MARKET ACTIVITY IN BERKELEY 1983-1984

| <u>Unit Size</u> | <u>Units Sold</u> | <u>Average Price</u> | <u>Adjusted to 1985*</u> |
|------------------|-------------------|----------------------|--------------------------|
| 1 Bedroom | 18 | \$82,578 | \$87,000 |
| 2 Bedroom | 184 | \$120,863 | \$127,000 |
| 3 Bedroom | 171 | \$171,228 | \$180,000 |
| 4 Bedroom | 79 | \$196,055 | \$206,000 |
| 5+ Bedroom | 40 | \$264,070 | \$277,000 |

Source: Berkeley Real Estate Board

No Figures are available for studio sales

* Approximately 5% inflation rate, rounded to nearest thousand dollars.

As the two tables show, the waterfront housing would be 15-26% more costly than existing one-bedroom units for sale in Berkeley, and 2-15% more costly than existing two-bedroom units for sale in Berkeley.

The probable occupants of the waterfront housing under these financial assumptions would be comparatively high income individuals and two income households. In order to afford housing in the \$80,000 to \$125,000 price range, annual household income would need to be \$32,000 to \$49,000 if no more than 33% of income were allocated to housing. /1/

About 25% of those employed on the waterfront could afford the cheapest dwelling unit but only 12% could afford the most expensive units. Table V.G.3 shows the number and proportion of each occupational group that could afford the cheapest and costliest units that would be built on the waterfront. About 930 of those who would work on the waterfront could afford the studio unit and 420 could afford the 2-bedroom unit. Of course not all those who could afford it would live in a studio, particularly the professional and managerial workers. Those groups tend to prefer larger units, but only 20% of the professionals (214 people) and 22% of the managers (139 people) could afford the 2-bedroom unit on a single income.

TABLE V.G.3: WATERFRONT WORKERS WHO COULD AFFORD UNITS ON THE WATERFRONT
ALTERNATIVE 3

| | <u>Total</u> <u>Workers</u> | <u>Can Afford Cheapest Unit</u> <u>%</u> | <u>\$</u> | <u>Can Afford Costliest Unit</u> <u>%</u> | <u>\$</u> |
|--------------|--------------------------------|---|-----------|--|-----------|
| Professional | 1,049 | 41.00 | 428 | 20.00 | 214 |
| Managers | 631 | 45.00 | 284 | 22.00 | 139 |
| Clerical | 1,133 | 9.00 | 102 | 2.00 | 23 |
| Sales | 133 | 26.00 | 35 | 13.00 | 17 |
| Service | 433 | 5.00 | 22 | 1.00 | 5 |
| Crafts | <u>152</u> | 40.00 | <u>61</u> | 14.00 | <u>22</u> |
| TOTALS | 3,531 | | 932 | | 420 |

Source: PAD, Inc. and Census Data

There are relatively fewer sales, service and clerical workers who would be able to afford waterfront housing unless they belonged to dual income households. This is true for many professional, technical, managerial and administrative workers as well. For Alternative 3, there would be about 2,600 persons that could not afford to reside on the waterfront unless they were members of dual income households. For Alameda County as a whole, 54% of the families have two income earners with an estimated 1985 household income of about \$48,000./2/ Such families could afford one of the highest priced units on the waterfront.

In Berkeley about 28% (12,733) of the households could afford the least expensive unit priced at \$80,000. The most expensive units would be affordable to about 19% (8,355) of the households in Berkeley./3/ Of the households that could afford to live on the waterfront, there is no way to estimate the amount that would actually move. The majority of the future waterfront residents would probably move from outside of Berkeley.

City policies could modify the mix of housing that is likely to be built under market conditions. For example, the City could encourage some or all of the housing to be rental units, to be family-oriented or to be affordable to moderate income households. Private market response to such policies will depend on the incentives the City can provide and the City's own ability to participate in housing development programs.

Off-site Housing

Provision of off-site housing depends on establishing appropriate policies and conditions of approval for private commercial development projects on the waterfront. The purpose of providing off-site housing is to serve the City's housing needs and to off-set impacts of commercial development on the waterfront. Since much of this can not be accomplished with market rate housing, subsidies will be needed from private commercial development. In general, the more commercial development the more housing can be assisted. The underlying assumptions are that commercial development is profitable, meeting housing needs is not profitable and some of the profits from the former can be used to subsidize the latter. Therefore, Alternative 4 has the greatest potential to provide housing assistance off-site. If any below market rate housing is provided on-site under Alternative 3, it will have to be supported by the commercial development associated with that alternative.

Who will be served by off-site housing depends on the types of programs the City wishes to pursue. These programs can be targeted to Berkeley residents, but they would be open to non-residents as well. Funds generated by private development can be used for deep subsidies such as mortgage assistance programs or shallow subsidies such as rehabilitation loans. There are as many policy options open to the City as there are housing programs in place in the City.

Criterion G.2

How do the alternatives compare in affecting housing affordability in adjacent areas and throughout Berkeley?

Housing Affordability Near the Waterfront

All of the alternatives have the potential to increase land values in the vicinity of the waterfront which might be reflected in housing prices. The reasons for this are varied. Alternatives 1 and 2 involve significant recreation and open space that will be attractive to nearby neighborhood residents. It will likewise be attractive to people who would like to live near a major waterfront park and are willing to pay for that privilege. These people will pay more than they otherwise would to live in West Berkeley solely because of the park. Their demand for housing near the waterfront will cause housing prices to rise. Those who own housing in the vicinity will directly benefit from this demand, because the value of housing will increase more than it would without waterfront improvements.

Alternative 3 contains open space, housing and commercial development. To the extent that a lively, mixed use development on the waterfront is perceived as an attractant, it will have land value effects similar to Alternative 1 and 4 (see below). That is, it represents an improvement of the waterfront that can have spillover effects in West Berkeley, especially if linkages are physically and visually strong. Unless City policies specifically call for waterfront housing that serves the City's needs, the on-site housing in Alternative 3 would not relieve all housing pressures in West Berkeley, because most of the people working on the waterfront could not afford to live there. For those who will seek owner-occupied housing near the waterfront, West Berkeley housing prices will be very attractive. It is estimated that median owner-occupied housing adjacent to the waterfront is valued at \$58,000 - \$68,000 in 1985 dollars. /4/ This is significantly less than the cost of the cheapest waterfront housing would be.

Alternative 4 involves the greatest amount of commercial development and employment. It will affect housing prices in the vicinity because some waterfront workers will seek housing near their jobs. West Berkeley has a relatively cheap housing stock that will be highly desirable to those waterfront workers who wish to acquire a house for the first time. Those who currently own housing in the area will benefit from this demand.

It is not possible to quantify the monetary impact of waterfront development on housing affordability in West Berkeley because too many variables affect affordability and propensity for a neighborhood to change. For example, the freeway is a barrier that separates West Berkeley from the waterfront. This could inhibit the spillover effects of waterfront improvement, dampening the tendency for land values to increase. Another difficulty in specifying monetary impacts is isolating the effect of waterfront improvement from other influences such as interest rates, the on-going gentrification process and the availability of other housing choices. A third problem is predicting monetary effects over a 20-year period, during which land use, employment and financial factors will vary in unpredictable ways.

Currently, rental housing in Berkeley is protected from price increases by Rent Stabilization regulations and limitations on condominium conversions. The owner-occupied housing stock is vulnerable to turnover if owners wish to move. However, those residents of West Berkeley would be compensated for their homes in the form of higher sales prices. Although it is not possible to quantify the effect of waterfront development in nearby housing prices, an upper limit is the price of housing on the waterfront itself, estimated at \$80,000 - \$125,000 in 1985 dollars. The reason for the ceiling is the superior amenity, quality and location of the new housing, compared to the West Berkeley housing stock.

Housing Affordability Throughout Berkeley

The effects of waterfront development in Berkeley as a whole would be to increase the demand for housing and thus increase housing prices, unless the housing supply of the City also increases. Housing demand due to waterfront development derives from increased employment and physical improvements of the site. Increased employment in Berkeley will affect housing demand because some workers will seek Berkeley housing so that they can enjoy the convenience of easy access to the workplace. Physical improvement of the waterfront will make Berkeley a more attractive place to live, regardless of place of employment. This attractiveness will be internalized in housing values. Alternative 4 will have the greatest impact of housing affordability. That is, it will:

- (a) Raise land values the most;
- (b) Introduce the greatest number of employees, some of whom will demand Berkeley housing;
- (c) Provide no on-site housing.

It should be noted that even with housing subsidies thrown off by this alternative, a portion of employee-generated housing demand will impact the City's existing housing stock.

Alternative 3 is ranked second on impacting housing affordability in Berkeley, primarily because of the amount of office space that will attract workers who will seek housing in Berkeley. Although some of this demand will be met by on-site housing, many workers will not be able to afford waterfront housing and will seek accommodations in other parts of the City.

Alternatives 1 and 2 will not have significant employment-related impacts in affordable housing in Berkeley because the workforce associated with commercial/recreation land uses is not highly paid. Consequently, they will not have market power to bid up housing prices. However, the aesthetic qualities of waterfront parks and recreation could cause housing prices to rise in Berkeley by making the City a more desirable place to live. The effect due to aesthetics would be small for locations distant from the waterfront and would be impossible to isolate from larger economic forces such as interest rates, demographics changes, housing supply and growth of the region as a whole.

Criterion G.3

How do the alternative compare in generating and accommodating housing needs?

Housing need is distinguished from housing demand in that it refers to people who do not have the income or other financial resources to purchase suitable housing. Some of those with housing needs are of low or moderate income; others have a reasonable income but cannot afford housing prices in a city like Berkeley. The extent of this need depends on the relationship of incomes to available housing prices. As noted above, only Alternative 3 will include housing, and this housing would be affordable to less than half the employees on the site. Of the remainder, only those who would want to move to the City and find they cannot afford it would experience housing need.

Some waterfront job holders will already reside in Berkeley, others will make no residence change as a result of job location changes, and still others who now live in Berkeley will move out of the City after they start working on the waterfront. A study of employee residence patterns and moves associated with office buildings with some retail in San Francisco showed the following results one and two years after occupancy:

- 4 % employees moved into the City
- 3 % employees moved out of the City
- 6 % employees moved between other counties
(i.e., not involving Alameda County)
- 87 % employees did not move
- 1 % net increase in City residents

If the same holds true Berkeley, Alternative 3 would result in 35 new Berkeley residents within two years of office occupancy while Alternative 4 would result in 104.

Over the long run, residence patterns for waterfront employees may approximate the historical residence patterns of Berkeley workers. In 1980 Berkeley provided 55,400 jobs; of these 40% (22,000) were held by people who live in the City and 60% (33,200) were held by those who commute into the City. If this is true for waterfront employees, 40% will ultimately want to live in Berkeley, and 60% will be satisfied to commute into the City. Of the 40% who might seek housing in Berkeley, some will be discouraged by the lack of affordable housing. This group can be said to experience housing need.

Alternative 4 has the greatest impact on generating housing needs because it would generate the greatest number of jobs. It is estimated that 4,200 (40%) workers would ultimately seek housing in Berkeley under this alternative,

while none is provided on site. Employees could obtain housing in the market place, if they had incomes of \$35,000 to \$51,000 to purchase an existing one or two bedroom unit in Berkeley. However, clerical, sales and service workers would have a difficult time finding housing unless more were built for lower income groups. This alternative has the greatest potential to accommodate housing needs by throwing off funds for housing subsidy programs.

Alternative 3 ranks second in generating housing need because 1,400 employees would seek to live in the City based on the 40% assumption. However, this alternative achieves the greatest jobs/ housing balance by including 950 units on-site.

Alternative 1 and 2 would have a negligible effect on housing needs.

Criterion G.4

How do the alternatives compare in creating housing opportunities which will help to off-set existing and new pressures for displacement of low and moderate income residents in West Berkeley and elsewhere in the City?

Alternative 3 and 4 have the potential off-set displacement tendencies which waterfront development will create. Alternative 3 can do this by providing housing; any increase in supply will have the effect of reducing demand that would otherwise focus on the existing housing stock. Alternative 4 can generate the greatest pool of funds to subsidize housing off-site in Berkeley. These funds could be used for neighborhood preservation and stability purposes such as housing rehabilitation, code enforcement, new low and moderate income housing construction, rental subsidies and many other housing programs.

Alternatives 1 and 2 have negligible opportunities to off-set displacement that might result from waterfront improvements. However, these alternatives have the least tendency to induce displacement.

Criterion G.5

How do the alternatives compare in helping create a better waterfront environment and help link the City and the Bay by the establishment of a neighborhood at the waterfront?

Only Alternative 3 would satisfy this criterion because it is the only one that involves housing on the waterfront. The inclusion of housing would make the waterfront a 24-hour environment and holds the greatest opportunity to link and integrate the site with the rest of the City.

Footnotes:

/1/ Affordability Analysis

| | <u>Lowest Price Unit</u> | <u>Highest Price Unit</u> |
|--|--------------------------|---------------------------|
| Unit Price | \$80,000 | \$125,000 |
| Down payment (a) | 12,000 | 18,750 |
| 30-Year Mortgage Principal | 68,000 | 106,250 |
| Mortgage Payment(b) | 9,026 | 14,104 |
| Property tax (c) | 840 | 1,357 |
| Utilities(d) | 454 | 454 |
| Insurance (e) | 394 | 513 |
| TOTAL ANNUAL HOUSING EXPENSES | \$10,714 | \$16,428 |
| INCOME REQUIRED | \$32,142 | \$49,284 |
| (if no more than 33% goes to housing) | | |
| Ratios of income to housing price : approximately 40%. | | |

Notes:

- (a) A 15% downpayment was chosen because because the U.S. League of Savings Institutions indicates that 30% of San Francisco SMSA homebuyers pay 20% or more of the purchase price, and 42% pay 10% or less.
- (b) 13% interest rate; typical 1985 lending rate in California, U.S. League of Savings Institutions
- (c) Unit price less homeowners exemption of \$7,000 x average tax rate (1.15%) for Berkeley
- (d) Pacific Gas & Electric Company, Jack Nealy, Senior Statistical Analyst; typical Berkeley residential utility cost.
- (e) U.S. League of Savings Institutions, proportional to \$492 for a \$120,000 unit.

These assumptions do not take into consideration the significant tax effects associated with homeownership because the circumstances of each household are unique. In general, income tax deductions for interest and property taxes reduce the burden of housing costs. Nonetheless, housing prices are so high that most households cannot qualify for loans needed to purchase a typical new condominium.

/2/ In 1979, families with two or more workers had a household income of \$31,756; adjusted by the Employment Cost Index to 1985, this is about \$48,000.

/3/ This is based on the percent of households that earned at least \$25,000 a year according to the 1980 Census, escalated 5% per year for wage inflation.

/4/ This is based on 1980 Census data for tracts 21 and 32, with owner-occupied non-condominium housing value escalated 5% per year.

BERKELEY WATERFRONT PLAN
EVALUATION OF ALTERNATIVES

Community Services

Prepared by ESA

H. COMMUNITY SERVICES: SCHOOLS, FIRE, POLICE

INTRODUCTION

Criterion E6

HOW DO THE ALTERNATIVES COMPARE IN TERMS OF THEIR ABILITY TO MITIGATE IMPACTS ON UTILITY SYSTEMS AND OTHER PUBLIC FACILITIES/SERVICES?

Overview

Schools. Little or no increase in demand or cost is expected because: 1) an influx of children as a result of development is not expected (housing proposed in Alternative 3 is adult condominium-type); 2) City has vacant school facilities which could be used if necessary. Cost for hiring teachers (if necessary, but unlikely): starting salary \$17,000/year, senior salary \$30,000.

Fire. For any level of development, the water supply/hydrant system to waterfront would need to be improved, e.g., looping the system by extending a second main to the waterfront to connect with existing main, adding hydrants as required by development. Cost: \$1,960 per main extension plus new hydrant; \$60/per foot for lateral connection of new hydrant to main. An emphasis should be placed on built-in and on-site fire prevention and protection facilities, equipment, and capabilities to reduce fire potential and aid department personnel in the event of fire (e.g., sprinklers, hoses, breathing apparatus, break-away glass windows, etc.) Any significant development, i.e., Alternatives 3 and 4, would require a new fire station in the waterfront development area. Estimated cost for new station: \$2 million for construction, equipment and personnel, \$500,000 per year for salaries.

Police. Development would generate a need for at least two new patrol beats to cover any increase in activity on the waterfront. Minimum cost (for 24 hour, 7 day a week coverage of two beats): \$911,000 per year (includes equipment and personnel).

Alternative 1

Schools. No cost increase.

Fire. Extend second water main to waterfront, loop system, install new hydrants. All new structures would require sprinklers and incorporation of built-in fire prevention and protection features/equipment. Increased human activity on waterfront may require relocation of City ambulances to allow quicker response to waterfront area.

Police. Create two new patrol beats, requiring additional personnel and equipment.

Alternative 2

Schools. No cost increase.

Fire. Similar to Alternative 1 above. More hydrants would be needed due to greater structural development. Structures would require sprinklers, other fire prevention design features and on-site equipment as determined by the Fire Department. Increased demand for emergency care/ambulance assistance.

Police. Same as Alternative 1 above.

Alternative 3

Schools. Cost increase unlikely, no school-age children expected. If some children were to move into the City as a result of waterfront development, they could likely be accommodated at existing schools. (Possible but unlikely cost for hiring new teachers.)

Fire. Extend second water main, loop system, new hydrants (one every 500 feet in densely developed area). New fire station on waterfront required. (See discussion below for type of station and equipment needed/considered.) The increase in human activity, particularly with the hotels, would require ambulance/emergency care capabilities and equipment at the new station. Again, emphasis on incorporation of built-in/on-site fire prevention and protection features into development plan as required and/or recommended by the Fire Department.

Police. Create two new patrol beats, minimum; possibly a third, given level of development.

Alternative 4

Same as Alternative 3 in all service areas. This alternative represents the greatest level of development and therefore, the greatest demand for protection of life and property.

BERKELEY POLICE DEPARTMENT /1/

Existing Conditions

At present, the department has two patrol beats covering the Berkeley Waterfront. One beat extends from San Pablo Avenue to the water from University Avenue north to the city limit with Albany (#15). The other beat extends from San Pablo Avenue to the water from University Avenue south to the city limit with Oakland. The department station is located at 2171 McKinley, about 2 miles from the waterfront. Response time is approximately 5 minutes. There is one officer per car, and one patrol car covers each beat 24 hours a day 7 days a week. In general, the waterfront area, mostly vacant, has a low level of police activity. The Berkeley Marina area, however, is busy, particularly in summer and requires greater police department attention.

Service Needs and Capabilities for Waterfront Development

Developing the Berkeley waterfront at any level would minimally require the creation of two new patrol beats; one would include the area west of I-80 from University Avenue north to Albany, and the other I-80 west from University Avenue south to Oakland. Approximately 4.2 officers are needed to provide 24 hour, 7 day a week coverage to a beat. (1.4 officers per shift, 3 shifts per day.) Minimally, then, the department would need 8.4 additional officers to cover the two new waterfront beats. Also, at least two additional patrol cars would be needed.

Potential Costs

| | |
|---|----------------------|
| Senior Patrolman - average salary \$2,700/month | \$32,400/year |
| Fringe benefit package for patrolmen equivalent to 40-50% of salary (using 50%) | <u>\$16,200/year</u> |
| Subtotal | \$48,600/year |
| Salary/Patrolman x Patrolmen/beat = \$48,600 x 4.2 = | \$204,120 |
| 1 Patrol Car | <u>18,000</u> |
| Subtotal: | \$222,120 |
| Minimum total cost for expanded police coverage of two new beats/year: 2 x \$222,120.00 = | \$444,240 |

As stated, two new beats would be the minimum requirement. After the area is developed, service in the two new beats would be reassessed, and the size of the beats would be adjusted to more accurately reflect the level of service required. If the type and/or density of development calls for greater demand in police response than can be covered, a beat area will be reduced and another expanded, or perhaps a new beat created. The level of police service required will depend on the types of land uses established (residential, commercial, open space, etc.). An open space area with few restrictions (hours of operation, etc.) would require the least additional effort. Residential development typically requires the greatest level of service. See Summary section for review of police service needs and capabilities by Alternative.

BERKELEY FIRE DEPARTMENT /2/

Existing Conditions

Station 6 on Cedar Avenue and 9th Street provides first response to the waterfront. Response time is roughly 4-6 minutes. It is a single engine company with one pumper engine and three people per shift (three shifts per day = 9-10 full time employees). Presently, Station 6 has responsibility for much of the industrial area east of I-80. Station 1, also a single engine company, at 2442 8th Street (south of University Avenue) provides second response to the waterfront. The department has two aerial ladder trucks, one 85-foot and one 200-foot, housed at other stations.

The department operates two ambulances. The ambulance housed at Station 2 on Berkeley Way and Henley is nearest the waterfront, with a response time of approximately 8-10 minutes. In an emergency both an ambulance and the engine of first response would respond to the site. Each engine team has one Emergency Medical Technician (EMT). Two people staff each ambulance. The department is pursuing a program to train EMTs as paramedics. For additional emergency assistance Berkeley coordinates with the Albany ambulance team.

Water is supplied to the waterfront by one 8-inch main which west runs along University Avenue out to the Marina. Unlike water transmission to the rest of the city, this single main deadends at the Marina and is not "looped" or connected to a water main network. This setup limits the Department's control of water volume and pressure available to the waterfront area. The current water supply is adequate to cover existing conditions on the waterfront,

primarily the Marina area. The next nearest water main is a 12 inch line which runs east-west on Hearst Avenue and then along the Frontage Road. East Bay Municipal Utility District (EBMUD) installs new hydrants, extends water mains, and handles major repairs. The Department conducts routine inspection and maintenance of hydrants.

The Marina represents the greatest fire risk on the waterfront at present. Located literally on the edge of the service area, boats are docked closely to one another, which aids the spread of fire. There have been no major problems thus far, but there is potential for substantial property losses. All structures at the Marina, the hotel, restaurants, ship sales, and stores are sprinklered in accordance with City ordinance. The single access way to the Marina provided by University Avenue is adequate for now, given the low overall activity on the waterfront.

Services Needs and Capabilities for Waterfront Development

Under all development alternatives, the water transmission system serving the waterfront would have to be improved. This entails extending a second water main out to the Marina to connect with the existing main, creating a "looped" system. The looped system gives the Department much greater control over water volume and pressure available on the site. One possible approach would be to extend the existing 12-inch main, which runs west along Hearst Street to the Frontage Road, across the north side of the meadow to the Marina to connect with the existing main. New hydrants would be needed on the site; the number of hydrants would depend on the type and level of development. Generally, in fully developed areas, one hydrant is required every 500 feet.

The East Bay Municipal Utility District (EBMUD) is responsible for extending water mains and installing new hydrants. Extension of a water main and a single new hydrant costs approximately \$2,000; lateral connection of a hydrant to a water main is \$60 per foot.

With respect to new facilities, development Alternatives 3 and 4 would require a new station on the waterfront. Minimally, this would be a single engine station with 9-10 full-time staff and one pumper engine. Estimated minimum costs for a single engine station including personnel, construction, equipment, and training area, is two million dollars (\$2 million).

Depending on the type and level of development proposed for the waterfront, the Department would consider additional facilities for a new station. The Department has already considered moving its training area from its present location on Cedar Avenue near Station 6 to the waterfront. This could be done in conjunction with a new waterfront station (1 to 1-1/2 acres would be needed). Also, restationing one of the City's ambulances nearer the waterfront and/or providing emergency care capabilities at the new station may be necessary. Instead of a single pumper engine, the Department may consider stationing a truck equipped with a pumper, water supply, booster pump, and aerial ladder at the new station to handle the increasing responsibilities on the developed waterfront.

The Fire Department, like many City services, has reduced staff in response to budget cuts. Three people now staff a shift at a Single Engine Company, rather than four. In light of personnel reduction, the Department focuses on developing and implementing on-site fire prevention and protection measures to reduce fire risk and aid Department staff in the event of fire. The Prevention Division works with developers to incorporate such measures into

siting and structural design plans. Measures include sprinklers, improved ventilation systems, breakaway glass windows, department-regulation hoses and water pipe connections, breathing masks, adequate access, siting considerations for access to structures, and allowing on-site department practice as an area is being developed. These types of measures would be recommended in development of the Berkeley Waterfront.

BERKELEY SCHOOL DISTRICT /3/

Existing Conditions

The Berkeley School District has experienced a district-wide decline in enrollment levels through the past decade leaving it with some excess facilities and underenrollment at others. The district has seven kindergarten through 3rd grades (K - 3) schools in use and two vacant facilities; three 4-6 grade schools in use and one vacant facility. Two additional 'magnet' schools operated by the district offer special curriculum (K-6 and K-8). There are two junior high schools and one high school; all are underenrolled.

In Berkeley, generally all elementary school children must commute or be bused to school at some point as all K-3 schools are situated in the eastern part of the city and the 4-6 schools are in the western part. This arrangement supports the district's integration objectives.

Service Needs and Capabilities for Waterfront Development

Essentially, no students are expected to enter the Berkeley School system as a direct result of waterfront development. Only Alternative 3 proposes housing (950 units at buildout) but this would be primarily adult condominium type. Any school age children that might enter the district (perhaps as a result of families moving to Berkeley in connection with newly established waterfront jobs) could most likely be enrolled at existing schools. If additional classroom space was needed (improbable) now-vacant school facilities could be reopened. In this event, possible costs to the district include hiring new teachers (starting salary \$17,000; senior salary \$30,000), administration, and facilities maintenance.

NOTES - Community Services

/1/ Captain Jenkins, Patrol Division, Berkeley Police Department, personal communication April 5, 1985.

/2/ Chief James Brunetti, Assistant Fire Chief, Fire Prevention and Investigation, Berkeley Fire Department, interview April 18, 1985.

/3/ Bob White, Superintendent Berkeley School District, personal communication, April 8, 1985.

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